TORREY'S

MEDICAL BOTANY.

A

Medical Botany

By

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Outlines of Botany;

Structural, physiological, systimatical and medical

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1. Structural and Physiological Botany

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1. Plants consist of a hygrometrical membranous transparent tissue, chemically composed of oxygen, hydrogen carbon & nitrogen. They also contain many mineral substances derived from their food & deposited in their tissue

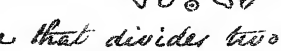
2. Their component parts are held together by an organic mucus, out of which the tissue itself is generated

There are five kinds of tissue, viz. cellular, woody, vascular pitted, and lxticiferous, each of which has certain modifications constituting the Elementary Organs

1. Elementary Organs.

3. Of these Cellular Tissue is the only form universally found in plants.

4. This is composed of vesicles, the sides of which are originally perforated by visible pores.

5. Each vesicle is a distinct individual, cohering with the vesicle with which it is in contact; and originating in a primitive point or cytoblast 

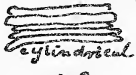
6. The membrane therefore that divides two contiguous cells is necessarily double. If the adhesion be imperfect, the spaces between the cells are called intercellular passages.

7. The sides of cellular tissue are often thickened by deposit,

Elementary Organs.

on their inner surface, of matter of lignification or sclerogen.  which is stratified, and often pierced with passages leading to the circumference.

9 The cells contain fluid; grains of coloring matter (chromule); starch in granules; and crystals, which, when acicular are called raphides

10 The vesicles of cellular tissue when slightly pressed together acquire a dodecahedral appearance, with an hexagonal section;  stretched lengthwise they become prismatical, cylindrical fusiform, &c. 

11 Cellular tissue, also called Parenchyma, constitutes all the pulpy parts; the medulla or pith, the medullary rays, a portion of the bark & the material between the veins of the leaves. It sometimes acquires excessive hardness by the deposit of sclerogen

12 Fusiform cellular tissue is called prosenchyma

13 The function of cellular tissue is to transmit fluids in all directions; the membrane of which it is composed is therefore permeable, although not in general furnished with visible pores

14 Cellular tissue is self-productive, one cell generating another upon its surface, from cytoblasts produced in the organic mucus.

15 Pitted Tissue (Bothrenchyma), is a modification of the cellular, either consisting of cylindrical cells placed end to end, opening into each other; or originally tubular. Its sides are marked with pits, resembling dots produced in consequence of the sclerogen being deposited unequally over the inside of the cells. Its office is to convey fluids with rapidity in the direction of the woody tissue that surrounds it.

16 Woody Tissue (Pleurenchyma) consists of elongated tubes, tapering to each end, and, like the vesicles of cellular tissue, imperforate to the eye. From that tissue it is distinguished by its cylindrical form, great length, extreme fineness, and toughness.

17 It constitutes the chief substance of wood, & is found in the parenchyma of the liber & in the veins of the leaves, or other appendages of the axis. Its functions are to give strength to the vegetable fabric & to serve for the passage of fluids from below upward.

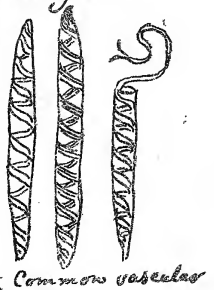
Common woody tissue

pitted woody tissue

18 Vascular Tissue (Trachenchyma) consists of very thin-sided cylinders, tapering to each end, and having a spiral fibre generated within.

19 They are found in the medullary sheath and in all the parts that proceed from it, especially the veins of the leaves, petals &c.; but are usually absent from the wood & bark

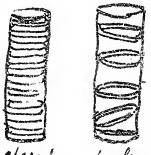
20 They seem to be intended for the conveyance of air.



Common vascular tissue

21 Ducts are transparent tubes, the sides of which are marked with rings, bars or transverse streaks.

22 They are slight modifications of the spiral vessels, differing principally in being incapable of unrolling, and, in some cases, in the turns of the spiral being distant, or broken



closed, broken ducts

23 They occur among the woody tissue of herbaceous plants, & in the wood of ferns & lycopodiums; also in the loose cellular tissue at the extremity of roots. Their functions are not well known.

24 Laticiferous Tissue (Cinenchyma) consists of uninterrupted anastomozing tubes, the

final divisions of which are extremely delicate. It forms the proper vessels of old writers, & conveys latex, a peculiar fluid, usually turbid, and colored red, white or yellow; often, however colorless

25. It principally occurs in the liber of Exogens, whence the ramifications proceed to the surface of all the organs, & penetrate the hairs, where they form a most delicate net work.

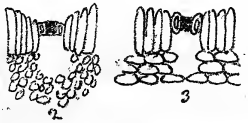
26. The use of this tissue is to carry the latex to all the newly formed organs, which are supposed to be nourished by it.

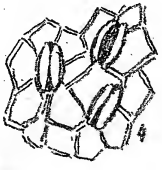
27 These five kinds of tissue, with their modifications, are the only forms known. Air vessels, Reservoirs of oil, Lenticular glands, are all either distended intercellular passages, or cavities built up with cellular tissue, or large cells filled with peculiar secretions.

28 All these forms of tissue are enclosed within a skin called Epidermis, which is made up of one or more layers of parenchyma, the vessels of which are compressed, & in a firm state of cohesion. It is spread over all the parts of plants which are exposed to the air, except the stigma and parts habitually living under water.

29 It is itself protected by an extremely thin pellicle called cuticle, which covers every part except the opening through the stomates.

30 Stomates are oval spaces lying between the sides of the cells, opening into intercellular spaces in the subjacent tissue,





and appearing to be bordered by a limb when viewed from above. This appearance is owing to the juxtaposition of 2 elastic vesicles, closing up or opening the aperture which they form.

31 They are found abundantly upon the leaves, particularly on the lower surface, occasionly also on organs that are modifications

Compound Organs.

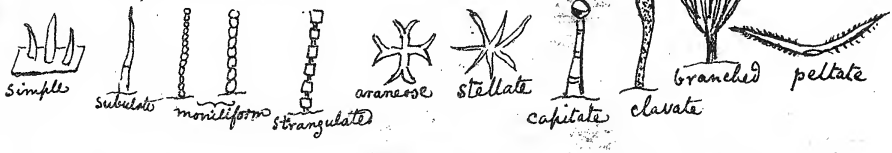
of leaves; & on the stem. They have not been found on the roots nor in colorless parasitical plants, nor the submerged part of plants; they are, moreover, rare, or altogether absent in succulent plants & in seeds.

32. The function of stomates is to regulate evaporation and respiration

33. Hairs are minute expansions of transparent cellular tissue They are of two kinds, lymphatic & secreting

34. Lymphatic hairs are formed by vesicles of cellular tissue placed end to end & not much varying in dimensions

35. Glandular hairs are formed by vesicles of cellular tissue placed end to end, & sensibly dilated at the apex or base into receptacles of fluid



36. Lymphatic hairs are for the absorbtion of moisture & for the protection of the surface on which they are placed

37. Glandular hairs are receptacles of the fluid peculiar to certain species of plants: as in the sweet briar & nettle. They may be regarded as organs of excretion

38. Prickles are conical hairs of large size, with very hard tissue.

II. Compound Organs.

39. These are formed of peculiar combinations of the elementary organs, & consist of the axis and its appendages.

40. The Axis is formed from an embryo or leaf-bud, by the developement of a root in one direction, & of a stem in the opposite direction.

41. An embryo is a young plant produced by the agency of

stamens and pistils and developed within a seed.

42. A leaf-bud is a young plant, produced without the agency of stamens & pistils, enclosed within rudimentary leaves called scales, and developed on a stem.

43. An embryo propagates the species, a leaf-bud the individual.

44. When the vital action of an embryo or bud is excited, the tissue developes in three directions, upwards, downwards & horizontally.

45. That part which developes downwards is called the descending axis or root; that upwards, the ascending axis or stem; that horizontally, the medullary system; and the part from which the two axes start is called the crown, or collar.

46 In the lower tribes of plants, however, the developement is often in only one or two directions.

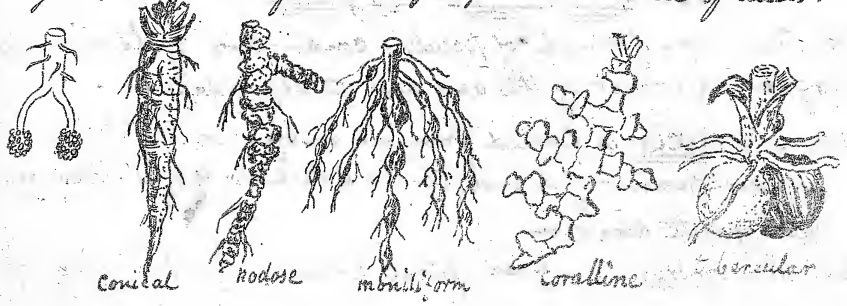
III. Root.

47. The root is formed by the descending and dividing fibres of the stem, from which it differs anatomically, in the absence of normal buds, and of stomates (30), and in Exogens, of pith.

48. Although the root has no distinct pith in Exogens, yet it posesses a distinct medullary system.

49. The functions of the root are to fix plants in the earth, & to absorb nutriment from it, & it lengthens exclusively by successive additions to the points of its divisions.

50 Absorbtion in the roots takes place almost exclusively by the extremities called spongelets or spongioles, which consist of a lax coating of cellular tissue lying upon a concentric layer of woody tissue, in the midst of which is often placed a bundle of ducts.



51. Most thick roots contain stores of nutricious matter upon which the young stem feeds. They must not be confounded with rootstocks or corms, which are forms of stems.

IV. Stem.

52. The stem is produced by the successive developement of leaf-buds (42), which lengthen in opposite directions

53. The matter which causes the increase of Exogenous plants descends from the leaf-buds, & the greater the number of these buds above a part the greater the diameter of that part.

54. In the spring the newly forming wood is to be traced in the form of organic fibres descending from the leaf buds; that which is most newly formed lying on the outside, and proceeding from the most newly developed buds.

55. The elongation of buds upwards gives rise to new axes, with their appendages; their elongation downward increases the diameter of that part of the axis which preexisted, and produces roots

56. The root, therefore, consists of extensions of woody tissue, & has no proper leaf-buds of its own.

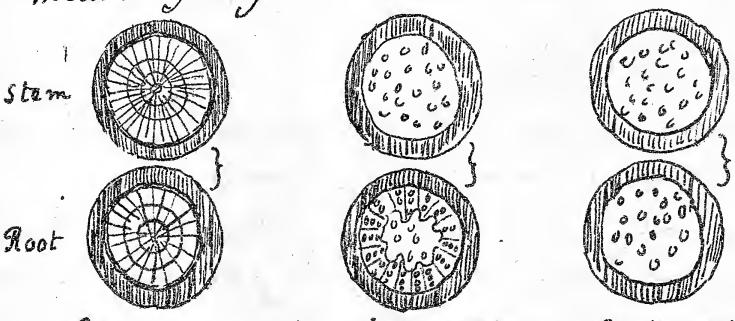
57 The leaf-buds thus successively ~~held together~~ developed, are held together by the medullary system of the stem, which proceeds from the bark inwards, connecting the circumference with ~~the~~ centre

58 The varies in structure in four principal ways: It is either formed ~~&~~ by successive additions to the outside of the wood, when it is called Exogenous; or by successive additions to its centre, when it is called Endogenous; or by the union of the bases of the leaves, and by addition to the point of the axis, or by simple elongation or expansion when no leaf-buds exist; this is called Acrogenous.

59 In what are called Dictyogens, the stem has the structure of Exogens, & the root that of Exogens nearly; Ex. Smilax

Stem.

60. The stem of Exogens may be distinguished into the Pith, the Medullary Sheath, the Wood, the Bark & the Medullary Rays.

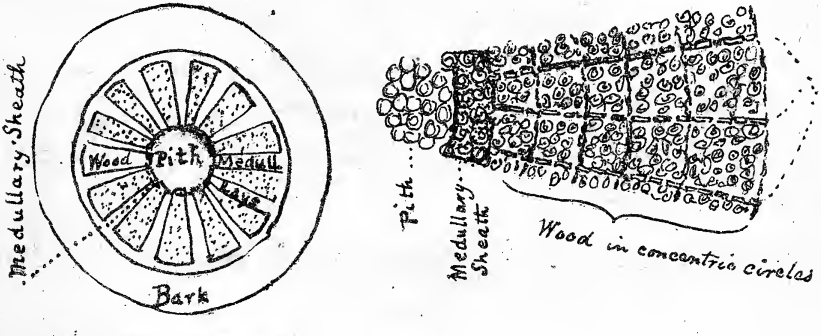


61. The Pith consists of cellular tissue, occupying the centre of the stem. It occasionally contains scattered spiral vessels It is produced by the elongation of the axis upwards

62. It serves to nourish the young buds until they are able to procure nourishment for themselves. For this purpose it is filled with starch, which becomes changed into mucilage, & then passes into the nascent organs. When it has performed this office it dies

63. The Medullary Sheath consists of spiral vessels. It immediately surrounds the pith, projections of which pass through it into the medullary rays. It is in direct communication with the leaf-buds & the veins of the leaves

64. It carries up the oxygen liberated by the decomposition of carbonic acid & water, and conducts it into the leaves



Stem.

65. The **Wood** lies upon the medullary sheath, and consists of concentric layers

66. It is formed by successive deposits of organized matter descending from the buds, and by the interposition of the medullary system, here called medullary rays, connecting the pith and the bark.

67. The first concentric layer lies immediately upon the medullary sheath and pith, & consists of woody & vascular tissue. Each succeeding concentric layer, consists of woody & vasiform tissue, which, either form themselves into distinct strata, in which case the latter is innermost, or are confounded together

68. A concentric layer, once formed, never alters in dimensions. Each concentric layer is usually the produce of one year's growth & the number of concentric circles of wood should determine the age of an Exogenous tree. But disturbing causes often render the rule uncertain: & in warm countries the period of rest is not distinctly marked.

69. The secretions of plants are mostly abundantly deposited in the oldest concentric layers; and when the tissue of the layers is filled with secretions, it ceases to perform any vital functions.

70. The dead & fully formed central layers are called the **heart-wood**

71. The living and incompletely formed external layers are called **alburnum**, or **sap-wood**

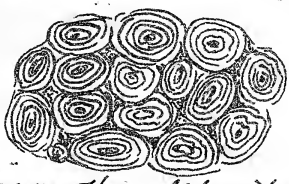
72. Upon the outside of the wood lies the **Bark**, which, like the wood, consists of concentric layers

73. It consists of four distinct parts: 1, **Epidermis**; 2, **Epiphloeum** 3, **Mesophloeum**; & 4, **Liber**; each of which increases by successive additions to its own inside, except the Epidermis.

Stem.

74. The Epiphloeum & Mesophloeum are both formed of cellular tissue only, but their cells are placed in different directions with respect to each other. The former is often soft & may separate spontaneously from the young layers forming beneath it; as in Cork.

75. The Liber consists of cellular tissue, laticiferous tissue & woody tissue. The tubes of the last are often thickened by a deposit of sedimentary matter, so that sections of them appear like concentric circles. Hence arises the toughness of the woody fibre in bark, & the use of liber for cordage.



76. The secretions of a plant are often deposited in the bark in preference to any other part. Hence the medicinal & chemical principles are often to be sought in the bark, rather than in the wood.

77. The immediate functions of the bark are to protect the young wood from injury, & to serve as a filter through which the descending elaborated juices of a plant may pass horizontally into the stem, or downwards into the root.

78. It also contains the laticiferous vessels, by which the latex is conveyed to all parts of the surface of a plant.

79. The Medullary Rays consist of compressed parallelograms of cellular tissue (muriform . . . .) belonging to the medullary system. These rays or plates form the silver grain of wood. They connect together the tissue of the trunk, maintaining a communication between the centre and the circumference.

80. They convey secreted matter horizontally from the bark to the heart-wood; and they generate adventitious buds.

81. Cambium is a viscid secretion, which in the spring separates the alburnum of an exogenous plant from the liber, & out of which the new elementary organs are formed.

Stem.

82. The stem of Endogenous plants offers no absolute distinction of Pith, medullary Rays, Pith & Bark; but is formed by the intermixture of bundles of vascular tissue, among a mass of cellular tissue; the whole of which is surrounded by a zone of cellular & woody tissue, inseparable from the stem itself and therefore not bark.

83. It increases by the successive descent of new bundles of fibro-vascular tissue down into the central cellular tissue, curving towards the circumferance as they descend

84. The vascular bundles of the centre gradually force outwards those which were first formed, the cellular mass augments simultaneously, & in this way the diameter of a stem increases

85. What appears to be bark in Endogens is an external layer of cellular tissue into which the lower extremities of the fibro-vascular tissue descend obliquely, losing their vascularity as soon as they reach the spurious bark.

86. The diameter of an Endogenous stem is determined by the power its tissue possesses of distending, and by its hardness.

87. When the external tissue has once become indurated, the stem can increase no further in diameter

88. Generally the terminal bud only of Endogenous plants is developed; but very often a considerable number develope: Ex. Asparagus. In the former case it is cylindrical; the latter, conical.

89. In Acrogens the stem is formed by the simple union between the bases of the leaves & the original axis of the bud from which they spring, and which they carry up along with them. Ex. Ferns

90. When Acrogens have no proper leaves, they are mere expansions of cellular matter, sometimes in all directions; Ex. Fungi; sometimes in particular directions; Ex. Lichens, &c.

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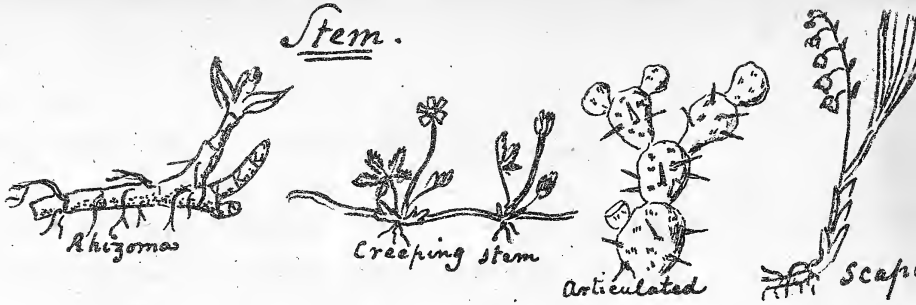
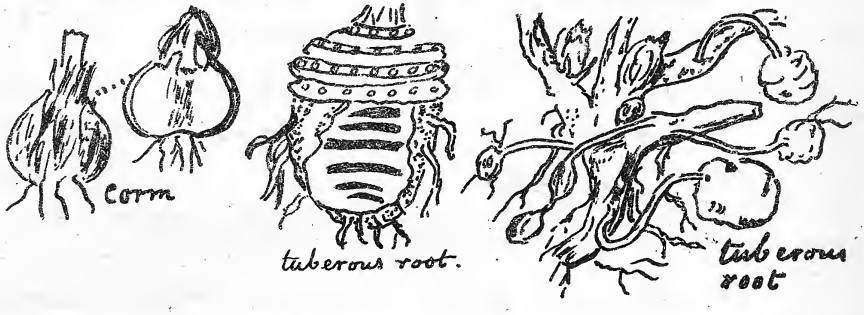
91. The stem assumes numerous and very different appearances in different plants

Stem.



92. Many forms of stem are vulgarly called roots; such as the Rhizoma or rootstock, which creeps upon, or under the earth, emitting roots from its under side; tubers, which are produced by a thickening of the internodes, & the corm which is a roundish under-ground distension of the stem



93. No root can have either scales (which are rudiments of leaves), or nodes (which are rudiments of buds)

94. The ascending axis, or stem, has nodes and internodes. Nodes are the places where the leaves are expanded & the buds form; internodes are the spaces between the nodes.

95. Whatever is produced by the evolution of a leaf-bud is a branch

96. A spine is an imperfect evolution of a leaf-bud

V. Leaf-buds.

97. Buds are of two kinds: Leaf-buds & Flower-buds

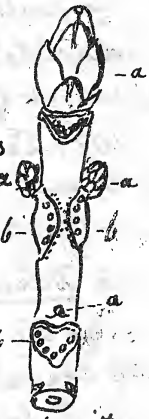
98 Leaf buds consist of rudimentary leaves surrounding a growing vital point, the tissue of which is capable of elongation, upwards in the form of a stem & downward in the form of root.

Leaf-buds.

99. Flower-buds consist of radimentary leaves surrounding a fixed vital point, & assuming, when fully developed, the form of floral envelopes, or the apparatus of stamens & pistils

100. The two kinds of buds sometimes show a tendency to change into each other.

a. buds
b. scars of the petioles



Branch, with leaf-buds

101. Within the scales of a leaf-bud is a center of cellular substance, coated with a thin stratum of spiral vessels & these two parts answer to the pith & medullary rays in Exogens.

101. By the growth of a leaf bud a branch is formed; and the scales gradually change into true leaves as vegetation advances.

102. Sometimes they separate spontaneously from the stem; when they are called bubblets.

Bubblets

103. Bulbs or Scaly bulbs, are merely underground buds of large size, filled with nutriment.

104. In the axils of the scales of bulbs, young buds or bulbs (cloves) are often formed; as in Garlic, and these gradually destroy the old bulb by feeding upon it. In like manner corms produce other corms at the axils of their scales, & are destroyed by their offspring.

(The figure represents a corm of Gladiolus with the vestiges of preceding corms at its base

The Colchicum bears its parent in the form of a shrivelled spongy lump on one side of its base, while on the opposite side a new bud is prepared, by which the parent will hereafter perish.

Leaf-buds.

105. Leaf-buds are of two kinds, the regular and the adventitious.

106. Regular or normal leaf-buds are only found in the axils of leaves. They exist in a developed, or undeveloped state in the axils of all leaves, & of all modifications of leaves.

107. Leaf-buds which are formed among the tissue of plants subsequently to the development of the stem and leaves, are called latent, adventitious, or abnormal.

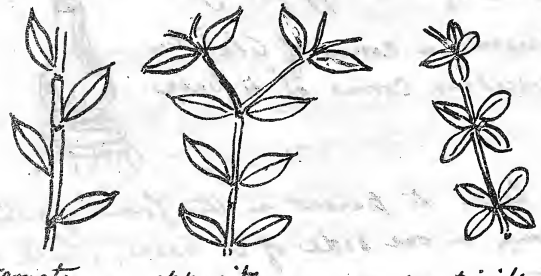
108. Adventitious Leaf-buds are formed in the root, among the wood, & at the margin or on the surface of the leaves.

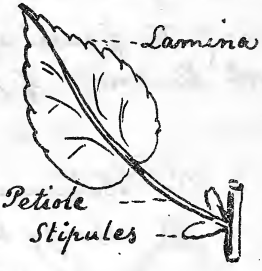
109. Embryo buds are woody nodules found in the bark of trees, and apparently rudimentary branches formed without leaves, from being forcibly pressed upon by the surrounding tissue.

VI. Leaves.

110. A leaf is an expansion of the bark immediately below the origin of a regular leaf-bud.

111. Leaves are developed alternately, one above and opposite the other, around their common axis. but sometimes, in consequence of the internodes ( ) being unequally developed, leaves become opposite, or verticillate.



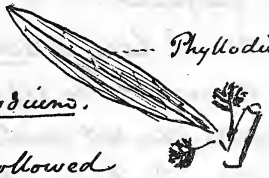


112. A leaf consists of a petiole or stalk, a lamina or blade & a pair of stipules.

Leaves.

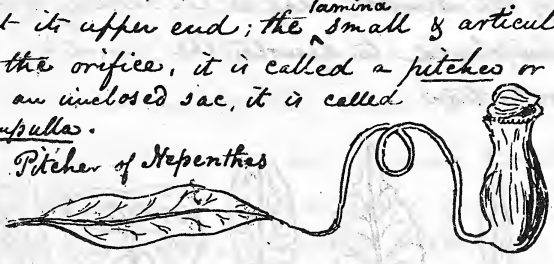
113. The Petiole is the channel through which the vessels of the leaf are connected with those of the stem. It is formed of one or more bundles of spiral vessels and woody tissue, enclosed in a cellular integument, which is a continuation of that of the bark.

114 The spiral vessels of the leaf of Exogens derive their origin from the medullary sheath; those of Endogens from the bundles of fibro-vascular tissue.



115. When the petiole is leafy & the lamina abortive, it is called a phyllodium.

116. When the petiole is dilated & hollowed out at its upper end; the lamina small & articulated with the orifice, it is called a pitcher or ascidium if it is an inclosed sac, it is called an ampulla.



117. The Lamina of a leaf is an expansion of the parenchyma of the petiole, & is traversed by veins which are ramifications or extensions of the bundles of vascular tissue of the petiole, or, when there is no petiole, of the stem.

118. Sometimes one, sometimes both the surfaces of a leaf are furnished with stomates.

119. In Exogens the veins usually branch in various directions among the parenchyma, forming a kind of net-work; while in Endogens they run parallel to each other, being connected by single transverse unbranched veins.

120. The principal vein of a leaf is a continuation of the petiole, & is called the midrib. its principal ramifications are called veins, & the subdivisions veinlets.

121. There are two strata of veins, the one belonging to the upper, the other to the under surface. The upper stratum conveys the juices from the stem into the lamina

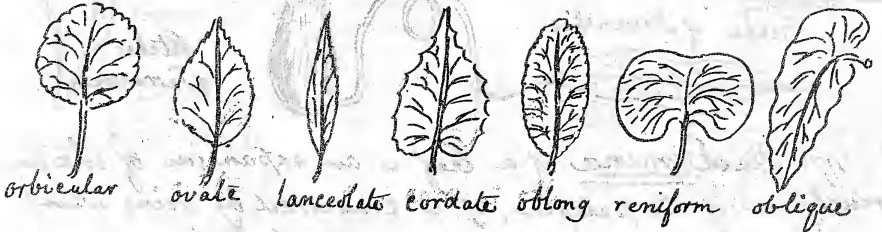
Leaves.

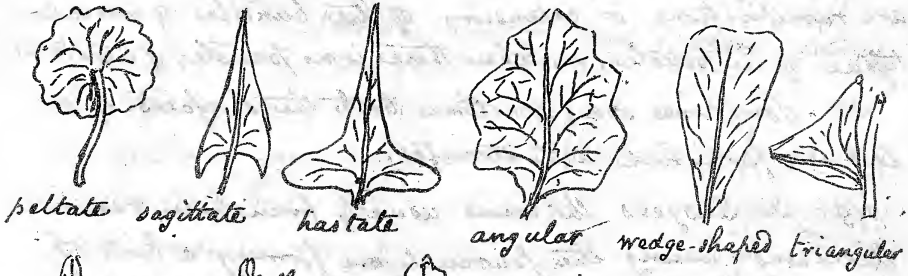
for the purpose of being aërated & elaborated; the under returns them into the bark

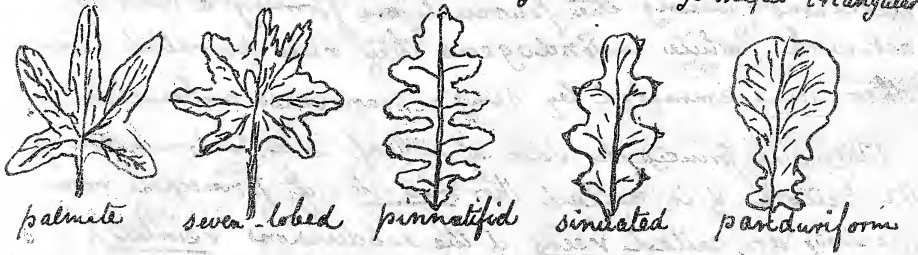
122. The cellular substance of the leaf is often stratified beneath the two surfaces; the upper stratum being more compact than the lower & having its cells perpendicular to the plane of the leaf: in such cases the cells of the lower stratum are commonly more or less parallel with the under surface

123. A leaf is <u>simple</u> when its lamina is undivided, or when, if it is separated into several divisions, those divisions do not reach the midrib

124. The form of the simple leaf is extremely variable and the terms employed to denote the variations are numerous in proportion







125. A leaf is compound when the divisions pass down to the midrib so as to subdivide the leaf into smaller distinct leaves or leaflets (foliola)

Leaves.

122. The following are forms of compound leaves

123. Stipules are attached to each side of the base of the petiole. They may be considered as rudimentary leaves. Sometimes they are transformed into leaves.

124. Whatever arises from the base of a petiole or of a sessile leaf, & attached to each side of it is a stipule

125. When the margins of a stipule cohere & form a tube, surrounding the stem, it is called an ochrea.

126. All leaves are originally continuous with the stem; as they grow, an interruption of their tissue at their junction with the stem takes place, by which a more or less complete articulation is at length formed. When completed, the tissue of the leaf becomes incrusted by foreign matter, & when incapable of further action, it dies. The stem or branch continuing to increase in diameter & the dead leaf not increasing with it, the latter is thrown off. This is the fall of the leaf. In some Endogens the articulation is so slight, & the stem increases so little in diameter, that the leaf is never thrown off, but simply withers & decays

127. The mode in which leaves are arranged within their buds is called vernation

128. Leaves have, under particular circumstances, the power of producing leaf buds from their margin.

VII. Food and Secretions.

129. Plants are nourished by the absorbtion of food from the air & earth, in consequence of which they grow & produce their peculiar secretions

130. The food of plants always consists of carbonic acid, nitrogen & water, & also of various mineral matters, chiefly alkalies, the nature of which varies with the species

131. Carbon is obtained by plants in the form of carbonic acid, derived from the atmosphere, or generated in soil by the decay of vegetable matter.

132. Hydrogen is obtained principally by the decomposition of water, & is assimilated with carbonic acid, while the oxygen of the water is liberated

133. Nitrogen can only be obtained by plants in the form of ammonia. This compound exists in every part of plants, in the roots, the stems, & in all blossoms & fruits in an unripe condition. It is supplied by rain water which carries it down from the air, ~~which~~ where it is always present, being derived from the putrefaction of plants & animals

134. The ammonia being taken up by the roots, & entering into the composition of the sap, its elements contribute to the formation of albumen, gluten & other compounds of which nitrogen is an ingredient

135. It is important that the ammonia be presented to plants in a fixed state, or in the form of salts, otherwise most of it is lost, on account of its volatility

136. Besides carbonic acid, water & ammonia, plants require other materials for their growth (1.)

137. One of the most important of these is phosphate of magnesia, which, in combination with ammonia is an invariable constituent of the seeds of grapes, including the various kinds of grain. Many plants also produce acids, which are necessary to their existence, & these acids require alkalies or earthy bases with which they may form

salts: The proportion of alkaline bases in a plant is indicated by the quantity of ashes left after burning, & this varies in different species. Consequently different species demand a different amount of alkaline food in the soil.

138. When alkaline matters are wanting, or deficient, in a soil, the growth of plants will either be arrested, or impeded, in proportion to the deficiency

139. Besides alkalies, plants require other substances, such as phosphoric acid, common salt, nitre, salts of iron & manganese &c; which are found in many species. & are probably essential to their healthy action, or even to their existence

140. As soon as food is absorbed, it begins to ascend into the stem, or to diffuse itself through the system, & receives the name of Sap

141. In the course of the sap upwards, the water and carbonic acid are partially decomposed, & their elements are deposited, along with nitrogen in the interior of the tissue forming a layer over the interior of every cell & vessel, which thus become in part solidified

142. As soon as the sap reaches the leaves, or the surface of the bark, green matter, or occasionally some other color, is formed, provided the part is exposed to the light. This matter seems to be produced from the elements of carbonic acid, ammonia & water; the oxygen being restored to the atmosphere

143. In the absence of light, plants reabsorb oxygen from the atmosphere & recombine it with the matter they contain, to be again liberated at the return of light. They also, at all times, especially at night, part with carbonic acid in small quantities. It is chiefly light, in conjunction with the vital forces, that causes the decomposition of the matters contained in living plants

144. In darkness no assimilation of the food takes place; oxygen accumulates. its natural proportion to the other elements is disarranged, the plant becomes blanched, & then dies.

Food and secretions

145. From the continued assimilation of the elementary constituents of plants, new products result & serve for the formation of woody fibre & all solid matters of a similar composition. The leaves produce sugar, starch & acids which previously, when necessary for the formation of stems, buds, leaves & branches, were formed by roots.

146. The motion of the sap upwards is caused by the newly developing leaf-buds, which constantly consume the sap that is near them, a fresh quantity being sent forward from the roots. The vessels which convey it possess a peculiar vital irritability

147. The irritability of plants is also shown by other phenomena, such as sudden motion of the stamens when touched, the collapse of many leaves when stimulated, &c.

148. After the sap has been distributed through the veins of the leaves, and exposed to the influence of air & light, it undergoes peculiar chemical changes. When these are accomplished it is called the proper juice.

149. The juice then flows back & descends towards the roots, passing also horizontally into the center of the stems.

150. Hence the great importance of leaves to plants, & the necessity of exposing them to the full influence of light & air

151. In Exogenous plants ( ) the upward course of the fluids is through the young wood; their downward passage through the bark, towards or into the root; & their horizontal diffusion takes place through the medullary rays

152. Hence the peculiar principles of the Exogens are, in trees & shrubs, to be sought either in the bark, or in the heart-wood ( ), not in the alburnum... In perennial herbaceous plants, the roots are the chief reservoir of the secretions; & in annuals, the stem and root of which last but a single season. the secretions are distributed equally through every part of the plant In annuals they are found in the greatest abundance at the end of their growth.

Flower-bud.

153. In Endogenous plants ( ) the upward course of the fluids is probably through the bundles of vas-vascular woody tissue, & the downward & horizontal passage through the cellular tissues

154. The precise direction of the sap in Acrogens ( ) is unknown

VIII. Flower-bud.

155. The Flower-bud consists of a fixed point surrounded by imbricated, rudimentary, or metamorphosed leaves, the external or inferior of which are usually alternate, & the internal or superior verticillate or opposite. The latter constitute the floral envelopes, stamens, & pistils

156. The leaf, from the axil of which a flower bud arises is called a bract or floral-leaf; & all rudimentary leaves, of what size or colour soever, which appear on the peduncle (160), between the floral leaf & the calyx (192) are called bracteoles

157. When a single bract (usually large & colored) is rolled together & placed at the base of that kind of inflorescence called a spadix (170), it is named Spath

158. Several bract in a whorl, or imbricated, & placed around those forms of inflorescence called umbel, or head constitute an involucre:

159. In grasses, sedges, & many other plant that are destitute of proper calyx & corolla, the stamens & pistils are protected by peculiar bracts called glumes & palea. They are placed alternate with each other, & not verticillate as in true floral envelopes

160. The axis of a flower bud usually lengthens only below the floral envelopes, forming a stalk which is called the peduncle. If this give off partial stalks at intervals, it is named a raclis, & the divisions are called pedicels

Flower-bud.

161. A flower, with its pedunele of bracteoles, may be considered as a modified branch

162. As flower-buds can only develope from the axil of a bract; a pedicel without bracteole can never produce other flowers, but if furnished with these organs it can often does, bear several flowers.

163. The manner in which the floral organs are arranged before expansion, is called aestivation or præfloration of which the following are examples.

164. The modes in which the flower-buds are arranged on the plant are called the forms of inflorescence; of the order in which they unfold is called the order of expansion.

IX. Inflorescence.

165. The following are the principal kinds of inflorescence

166. When no elongation of the general axis of a plant takes place beyond the developement of a flower bud, the flower is said to be terminal & solitary.

167. The flower is called solitary & axillary when only a single bud unfolds in the axil of a leaf, the general axis continuing to lengthen.

168. A raceme is formed when a number of flower-buds, each on a pedicel, are produced on a common axis.

169. A spike differs from a raceme in the buds being without pedicels

170. A spadix is a succulent axis, densely covered with flowers, & surrounded by a spathe (157)

171. An amentum or catkin is a spike, the bracts of which are all of equal size & closely imbricated, & the rachis of which is articulated with the stem.

Inflorescence.

172. When a bud produces numerous flower-buds which are sessile & closely aggregated into a head, the inflorescence is called a capitulum

173. An umbel is formed, when the flowers are on elongated pedunculi, which all proceed from the same point of the axis.

174. A panicle is a raceme the flower buds of which have produced other flower buds

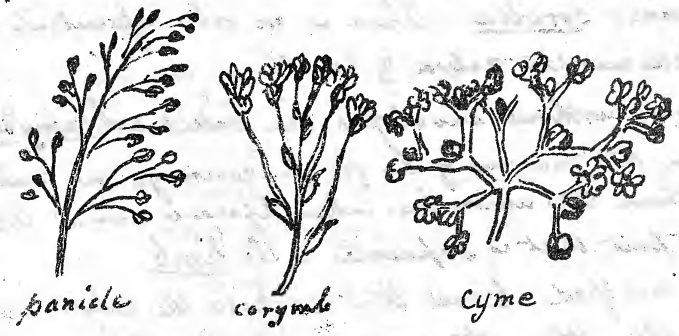
175. A raceme or panicle the lower flowers of which have long pedicels, & the uppermost short ones, is a corymb.

176. A panicle the middle branches of which are longer than those of the base or apex is called a thyrsus.

7. When the panicle has the elongation of all its branches arrested, so that it assumes the appearance of an umbel, it is called a cyme

178 When the order of expansion is from below upwards, it is called centripetal.

179. When the upper or central flowers open first, & those of the base or circumference last, the expansion is called centrifugal.



Inflorescence.

180. When the inflorescence is the result of the development of several branches, each particular branch follows the centripetal law of expansion; but the whole mass of inflorescence is centrifugal. This arises from the partial centripetal development commencing among the upper extremities of the inflorescence, instead of the lower.

190. The difference of expansion will therefore indicate whether the inflorescence proceeds from the buds of a single branch, when it is called simple, or of several branches, when it is called compound. When centripetal, it is simple; when centrifugal, it is compound, although in appearance simple. This difference is often of great importance

X. Floral Envelopes.

191. The Floral Envelopes are the parts that immediately surround the stamens & pistils.

192. They are formed of one or more whorls of modified leaves. From ordinary leaves they do not differ essentially, except in peculiar modifications of size or development.

192. When the envelopes consist of but one whorl of leaves, they are called calyx, whatever may be the color

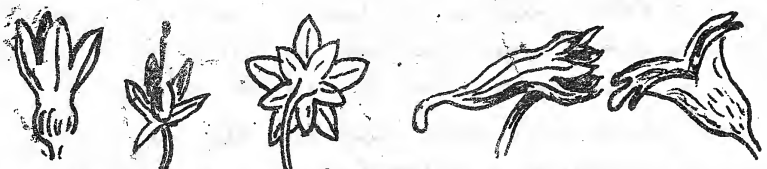
193. When there are two or more whorls, the outer is called calyx, the inner corolla. There is no other essential difference between the calyx & corolla.

194. Flowers without envelopes are called achlamydeous

195. When the margins of the floral coverings are united the part where the union has taken place is named the tube, & the part that is separate is the limb.

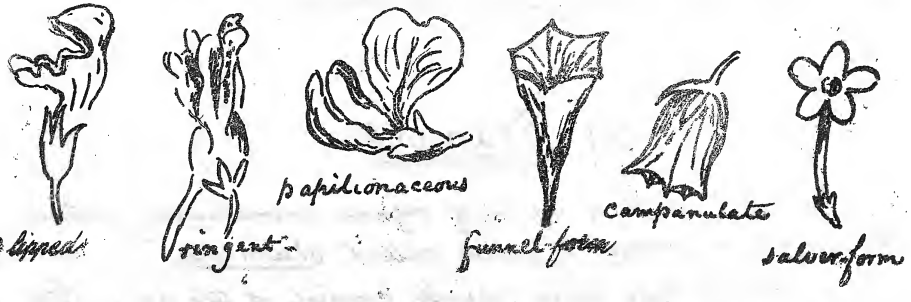
195. The modified leaves that compose the calyx, are called sepals. When they are distinct the calyx is said

to be polysepalous; when they are more or less united by their margins it is called monosepalous or gamosepalous.



superior inferior double spurred 2-lipped

196. The modified leaves of the corolla are called petals. They are usually of some bright color, different from that of the sepals. If not united with each other, they are said to be polypetalous; but if growing together more or less, by their margins, the flower is called monopetalous or gamopetalous.



197. The corolla or calyx is 2-lipped, when the petals or sepals are united in two parcels.

197. If the petals or sepals are unequal in size, the corolla or calyx is called irregular.

198. If there be five petals, of which the uppermost one is dilated, the two lateral ones contracted & parallel to each other, & the two lowest contracted & united with each other by the front margins, the flower is papilionaceous.

199. When a petal tapers towards its base, the narrow portion is called the unguis, or claw, of the upper part the limb. The former is analogous to the petiole, the latter to the lamina of a leaf.

200. The normal situation of the petals is alternate with the sepals; if they arise opposite to the sepals it is owing to the abortion

of one row or whorl of petals between the sepals and those petals which are actually developed

201. As petals always alternate with stamens, the number of each row of either will be the same. All deviations from this law are either apparent only, in consequence of partial cohesions, or, if real, are due to partial abortions.

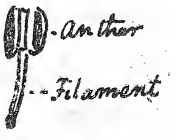
202. Whatever intervenes between the bracts (156) and the stamens belongs to the floral envelopes, and is either calyx or corolla; but many peculiar forms of the latter are called nectaries. These are however, no exact limits between the corolla and the stamens, & there are parts which may either be regarded as stamens passing into petals, or as petals passing into stamens.

XI. Stamens.

203. The whorl or circle of organs immediately within the petals is composed of bodies called stamens.

204 Each of these bodies usually consists of two parts; the filament & the anther.

205. The filament is composed of a bundle of spiral vessels, surrounded by cellular tissue The anther is a terminal case containing a peculiar arrangement of the same tissue & finally opening & discharging its contents



206. In many instances no limits can be traced between the petals & stamens: as in the White Pond Lily, or Nymphaea In such cases the limb of the petal (195) contracts and becomes an anther, while the unguis assumes the form of a filament

207. Now as there are no limits between petals and sepals nor between sepals & bracts (156), nor between bracts & leaves, it also follows that the stamens are likewise modifications of leaves.

Stamens.

208. The anther is a modification of the lamina of a leaf, & the filament of the petiole

209. When the stamens are twice as numerous as the petals, it is considered that two whorls are developed. If they are equal in number to the petals & opposite them, the inner whorl only is developed; the outer one being abortive

210. All deviations from these laws are owing to the abortion of some part of the stamens

211. When the stamens do not contract any adhesion to the sides of the calyx, they are hypogynous.

212. When they adhere to the sides of the calyx they are said to be perigynous.

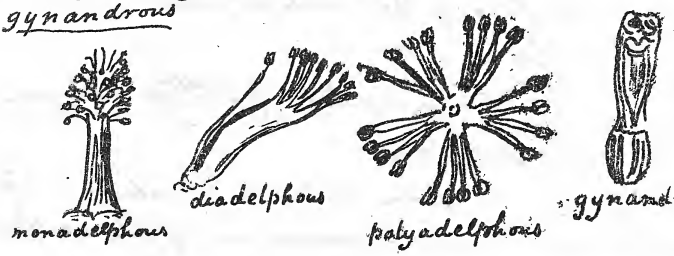
213. If they are united both with the surface of the calyx & of the ovary, they are epigynous.

214. If of 4 stamens two are long & two are short, they are called didynamous: & when there are 6 stamens, four of which are longer than the others, they are tetradynamous.

hypogynous perigynous epigynous didynamous tetradynamous.

215. The filaments are either distinct, or united by their margins. If they are united into one tube they are called monadelphous: if in two parcels they are diadelphous: if in several, they are said to be polyadelphous.

216 When they are united in a solid body, along with the styles, they form what is called a column, & are then gynandrous



monadelphous diadelphous polyadelphous gynandrous.

217. The filament of the stamen is often wanting, & then the anther is said to be sessile

218. The substance formed in the anther and finally discharged from it, is called pollen.

Stamens.

219. The two sides of the anther are called its lobes & the substance that connects them, (which may be regarded as a continuation of the midrib) is named the connective.

220. The connective is sometimes articulated with the filament, across which it hangs & on which it swings; in other cases it is forked & bears an anther lobe on each fork

221. The cavities of the anthers containing the pollen are the cells, & the place by which the pollen is emitted is the point or line of dehiscence; the membranous sides of the anther are named the valves.

222. Dehiscence usually takes place along a line, which may be regarded as the margin of the leaf out of which the anther is formed. Sometimes only a portion of this line opens, & then the anther is said to dehisce by pores

223. Sometimes the sides of the anther separate along the connective as well as at the margin & remain attached only at the top

224. The cells of the anther are usually two; sometimes four; rarely several, or only one

225. Sometimes the cells are folded & sinuous, or prolonged into tubes, &c.

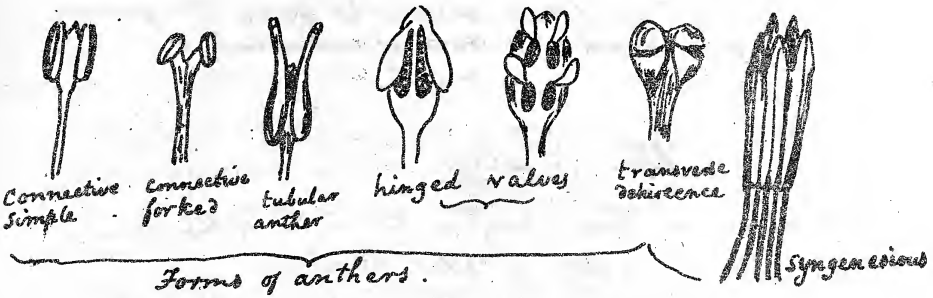
226. The line of dehiscence is occasionally transverse & in other cases the face of the anther breaks away in several hinged lobes

227. When anthers grow together by their margins, they are called Syngenesious.

228. The Pollen is formed by a peculiar modification of the cells of the parenchyma of the anther. It consists of hollow cases, extremely small, containing a fluid in which float grains of starch & drops of oil It is furnished with apertures, through which its lining is protruded in the form of a delicate tube, when the pollen comes in contact with the stigma

Stamens.

229. The shape of the pollen is variable: the more common forms are spherical, triangular, polygonal & oblong.



Forms of anthers.

230. The surface of the pollen is either smooth, or studded with little points.

231. The grains are usually distinct from each other, but in some cases they cohere in definite numbers; or in irregular masses; or are enclosed within a bag. When they cohere, they are connected by a process called the caudicle.

232. The function of the pollen is to vivify the ovules.

XII. Disk.

233. Whatever intervenes between the stamens & the pistil, receives the general name of disk. It usually consists of an annular elevation, encompassing the base of the ovary, when it is sometimes called the cup: or it appears in the form of a glandular lining of the tube of the calyx (as in the Rose) or of tooth-like processes at the base of the ovary.

234. When a fleshy substance occupies the centre of a flower, & bears a single row of carpels, it is called the gynobase. If it bears more carpels than a single row, it is called the torus or receptacle.

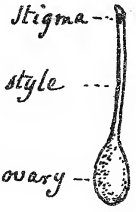
Pistils.

235. The disk is a non-developed inner row or rows of stamens. The Linnæan botanists included it among the forms of the nectary

236. The receptacle or torus is merely the growing point of a flowerbud in a state of enlargement.

XIII. Pistils.

237. The organ that occupies the centre of the flower, within the stamens & disk, is called the pistil.



238. It is distinguished into three parts; viz. the ovary, the style, and the stigma.

239. The Ovary is a hollow case containing one or more cavities, called cells, which enclose ovules (264).

240. The Stigma is the upper extremity of the pistil

241. The Style connects the ovary & stigma. When it is absent, the stigma is said to be sessile. It usually proceeds directly from the apex of the ovary; but in some cases it arises from the side or even the base of that organ

242. Strictly speaking, nothing is stigma but the naked secreting surface of the style

243. The pistil is either a modification of a single leaf, or of one or more whorls of modified leaves. Such modified leaves are called carpels.

244. A Carpel is formed by a folded leaf, the upper surface of which is folded inwards & the lower outwards; and within which are developed one or more modified buds or ovules.

245. When the carpels are all distinct or are separable with facility, they are apocarpous; when they all grow into a solid body, they are syncarpous.

246. The ovary is the lamina of the leaf; the style is an elongation of the midrib ( ); the stigma is the mere naked apex of the style. The part representing the petiole is usually wanting, but sometimes it is present & constitutes the stalk (thecaphore or gynophore) of the carpels

247. Where the margins of a folded leaf out of which the carpel is formed, meet & unite, a development of cellular tissue sometimes takes place, forming what is called the marginal placenta

248. Every such placenta, therefore, is composed of two parts; one of which belongs to one margin of the carpel & one to the other. In some cases, however, the placenta is a mere development of the centre of a bud.

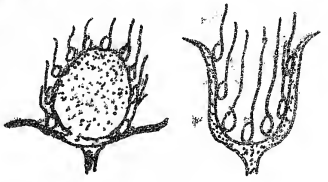
249. As the carpels are formed of leaves turned inwards, their margins are necessarily turned towards the axis, & a placenta formed by the union of those margins will be invariably next the axis

250. The normal position of the carpels is alternate with the innermost row of stamens, to which they are also equal in number; but this symmetry of arrangement is generally destroyed by the abortion or nondevelopement of part of the carpels

251. The carpels often occupy several whorls; in which case they are usually distinct from each other

252. When the carpels are arranged round a convex receptacle (234), the exterior ones will be lowest: as in the Raspberry.

253. If they occupy the surface of a tube, or are placed upon a concave receptacle, the exterior ones will be the uppermost.



254. When two carpels are developed, they are invariably opposite each other, & never side by side

255. When carpels unite, those parts of their sides which are contiguous ~~to each other~~ grow together & form partitions between the cavities of the carpels. These partitions are called dissepiments, & they are necessarily formed of two layers; but sometimes they are so intimately united that the layers cannot be distinguished

256. Such being the origin of dissepiments, it follows that: 1. all dissepiment are vertical, & never horizontal; 2. they are equal in number to the carpels out of which the pistil is formed: 3. a single carpel can have no true dissepiment

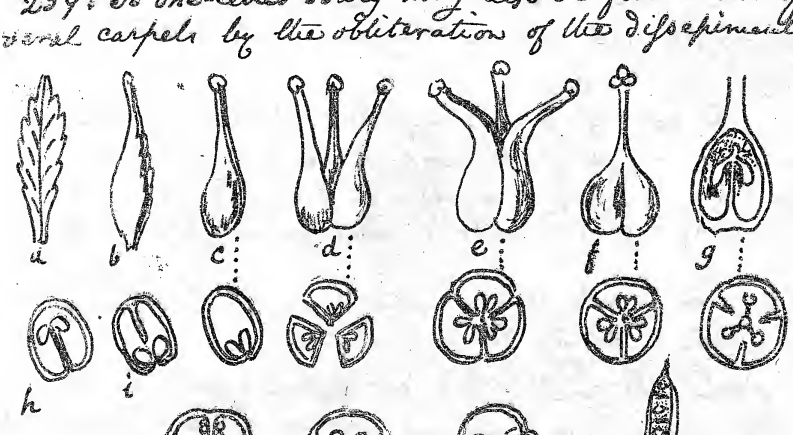
257. As the stigma is the point of the midrib, it will ~~always~~ always alternate with the dissepiments, which are formed of the sides

Pistils.

of the carpellary leaf

258. Sometimes the ovary is only one celled, although formed of several carpellary leaves. This is caused by the leaves not being turned in towards the axis, but merely united at their edges, or only slightly inflexed. The placentae are then said to be parietal. Occasionally they are diffused over the whole face of the dissepiments

259. A one-celled ovary may also be formed out of several carpels by the obliteration of the dissepiments.



a. a leaf; b. leaf rolled up, preparatory to its conversion into a carpel; c. a carpel; d. three carpels approximated but not united; e. the same united at the ovaries, but disunited at the styles; f. these completely united into one ovary (3-celled), one style & one stigma; k. placentae covering the dissepiments; l. m. parietal placentae

260. All dissepiments whose position is at variance with the foregoing laws are spurious

261. Spurious dissepiments derive their origin from various causes & may have either a vertical or horizontal position

262. When horizontal they are called phragmata (n) & are formed by a distension of the lining of the ovary. If vertical, they are either projections from the back of the carpel, or are produced by a turning inward of its margins (h. i.)

263. If the ovary adheres to the sides of the calyx, it is called inferior, & the calyx is said to be superior. If it contracts no adhesion with the calyx it called superior, & the calyx inferior.

XIV. Ovule.

264. The ovule is a body borne by the placenta & destined to become a seed

265. It is usually enclosed within an ovary (239); but in Coniferæ & Cycadeæ it is destitute of any covering, & is exposed naked to the influence of the pollen. The stalk by which it is usually attached to the placenta is called the funiculus or podosperm.

266. The point of union of the funiculus & the ovule is the base of the latter & the opposite extremity is its apex.

267. The ovule consists of two sacs, one enclosed within the other, & of a nucleus within the sacs. The outer sac is the primine & the inner one the secundine

268. The primine, secundine, & nucleus are all connected with each other by a continuity of tissues, at some point of their surface

269 The mouths of the two sacs usually contract into a small common aperture, called the foramen of the ovule, to which the apex of the nucleus is always applied

270. When the ovule is straight, i.e. where the point of union of the two sacs & of the nucleus is at the base, while the foramen is at the opposite end, it is called orthotropous.

271. The relative position of the parts of the ovule is often greatly changed at an early period of its growth, so that the place where the primine, secundine & nucleus are connected, is at the apex, & the foramen is found at the base. Such an ovule is called anatropous.

272. When the ovule is folded upon itself, or curved round, so that the foramen approaches the base it is said to be campulitropous.

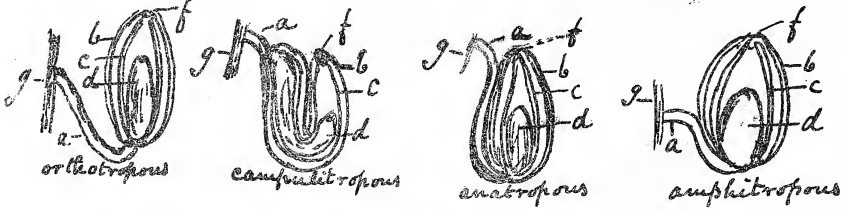
273. In anatropous ovules there is a vascular connection maintained between the base & the apex, by means of a cord or bundle of vessels called a raphe. It may be considered as a continuation of the funiculus, adhering to the side of the primine. The expansion of the raphe where it communicates with the sacs of nucleus gives rise to the chalaza of the seed.

Ovule

274. When the raphe is very short, so that the funiculus is attached to the middle of the ovule, the foramen being at one end & the base at the other, the ovule is called amphitropous

275. The normal position of the raphe is on that side of the ovule which is next the placenta

276. Within the nucleus (267) is a cavity or bag, called the sac of the amnios, containing a fluid named the liquor amnios, among which the embryo is developed.

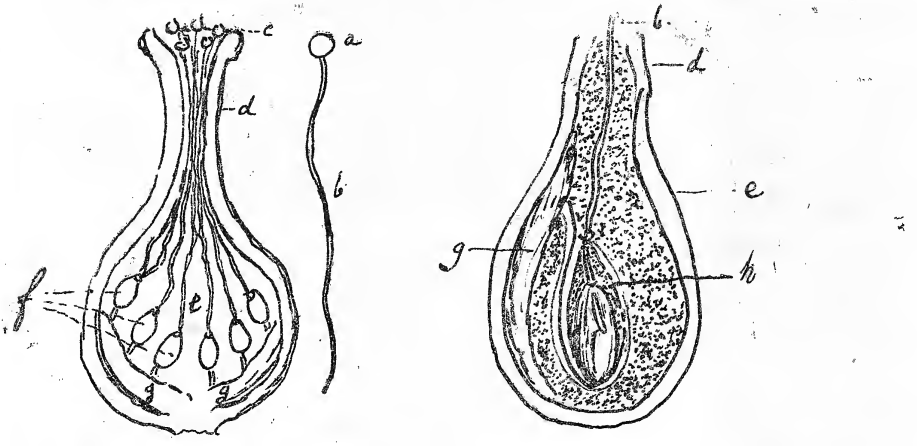


a. funiculus; b. primine; c. secundine; d. nucleus. f. foramen. g. placenta

XV. Impregnation.

277. Impregnation is effected by contact between the pollen and the stigma

278. The pollen emits a tube of extreme delicacy, which pierces the stigma & style, & passing downwards into the ovary enters the foramen of the ovule; having reached which, it comes into contact with the nucleus.



a. pollen; b. tube. c. stigma; d. style; e. ovary; g. placenta; f. ovules

Impregnation.

279. This accomplished, the act of impregnation is over; a new body gradually appears in the sac of the amnois (276) & eventually becomes an embryo

280. Great numbers of modifications of this phenomenon have been observed, but they all resolve themselves into these facts.

281. In plants, the ovules of which have no pericarpial covering, (Gymnosperms, 265) the pollen falls in the foramen & there acts as if it had come in contact with the stigma

282. If only one pollen tube enters an ovule, there is but one embryo formed in the seed. But if several pollen tubes pass into the same ovule, there may be several embryos in the same seed.

XVI. Fruit.

283. The fruit, in the strictest sense of the word, is the pistil arrived at maturity. But the term is also applied to the pistil & floral envelopes taken together, whenever they are all united in one uniform mass. Hence whatever is the structure of the pistil, the same should be the structure of the fruit. But in the course of the advance of the pistil towards maturity, many alterations take place, in consequence of abortion, non developement, obliteration, & union of parts.

284. Sometimes a pistil with several cells, produces a fruit with but one: as in the Oak, Hazel-Nut & Cocoa-Nut. This arises from obliteration of part of the cells.

285. At other times a pistil of only one or two cells, changes to a fruit having several. This may be caused by the formation of spurious dissepiments, &c.

286. As the fruit is the maturation of the pistil, it ought to indicate upon its surface some traces of a style; this is true in all cases, except in Gymnosperms (281) which have no ovary.

287. Hence the grains of corn, & many other bodies that resemble seeds, having traces of the remains of a style, cannot be seeds, but are minute fruits.

288. That part which was the ovary in the pistil, becomes the pericarp in the fruit.

289. The Pericarp consists of three parts; the outer coating called the Epicarp, the inner lining called the Endocarp, & the intermediate substance named the Sarcocarp.

Fruit.

290. Sometimes these three parts are all readily distinguished, as in the peach: frequently however they form one uniform substance

291. The base of the fruit is the part where it is joined to the peduncle. The apex is where the remains of the style are found

292. The axis of the fruit is often called the columella; the space where two carpels unite is the commissure.

293. All fruits which are mere modifications of a single carpellary leaf ( ) have always a suture corresponding with the junction of the margins (or with the placentae), & often another corresponding with the midrib of the leaf: the former is called the ventral, the latter the dorsal suture.

294. If the pericarp neither splits nor opens when ripe it is said to be indehiscent; if it does split or open it is said to dehisce, or to be dehiscent; & the pieces into which it splits are called the valves

294. The dehiscence of the pericarp takes place in different ways. If it take place longitudinally or vertically, so that the line of dehiscence corresponds with the junction of the carpels, the dissepiments are divided, the cells remain closed at the back, & the dehiscence is called septicidal

295. If it take place vertically, so that the line of dehiscence corresponds with the dorsal suture (293), the dissepiments remain united, the cells are opened at their back, & the dehiscence is called loculicidal.

296. When a separation in the pericarp takes place across the cells horizontally, the dehiscence is transverse or circumscissile.

septicidal

loculicidal

transverse

297. If the dehiscence is effected by partial openings of the pericarp, it is said to take place by pores: as in the Poppy

298. Sometimes the cells remain closed, & separate from the axis (292), as in Umbelliferae

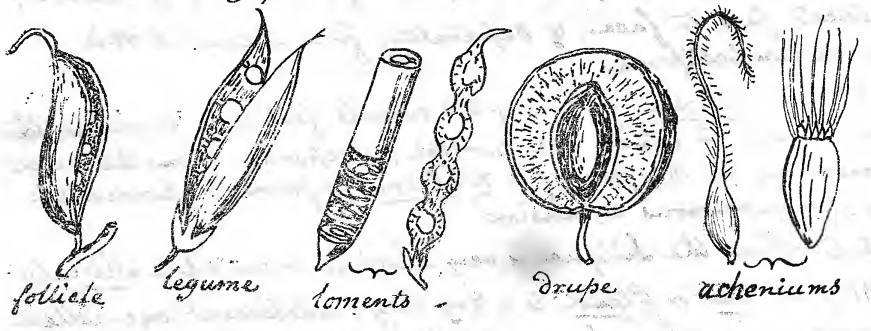
299. Or the cells open & separate from the axis, which is formed by the cohesion of many placentae, which separate from

from the dissepiments. At other times the dissepiments cohere at the axis & separate from the valves (294) or back of the carpels.

300. All fruits are either Simple or multiple. The former proceed from a single flower. The latter are formed out of several flowers, & consist of masses of inflorescence in a state of adhesion: as in the Fig, Pine Apple & Mulberry

301. Simple fruits are either the maturation of a single carpel (244), or of a pistil formed by the union of several carpels

302. Of fruits formed of a single carpellary leaf, the most important are the following; viz. the Follicle, Legume, Drupe Achenium, Caryopsis, & Utricle



303. The Follicle is a carpel dehiscing by the ventral suture & having no dorsal suture

304. The Legume is a carpel having both a ventral & dorsal suture, & dehiscing by both, either, or neither. When it is articulated transversely into several pieces it is called a loment.

305. The Drupe is indehiscent, & its pericarp presents a distinct separation of epicarp, sarcocarp & endocarp.

306. The Achenium is an indehiscent, bony, one-seeded pericarp, which does not adhere to the integument of the seed.

307. Sometimes it bears the remains of a calyx at its summit; or it is drawn out into a beak; or is lengthened into a tail; &c. In the Cashew-nut it is elevated on a large fleshy receptacle

308. The Caryopsis is an indehiscent, membranous, one-seeded pericarp, which adheres firmly to the integument of the seed; as in all the Grass Tribe.

309. The Utricle is a caryopsis, the pericarp of which has no adhesion with the integument of the seed

310. Of fruit formed of several carpels, the principal are the Capsule, Pyxis, Samara, Cremocarp, Nuculanium, Siliqua, Nut or Gland, Berry, Orange, Pome, Pepo, & Balausta

311. The Capsule is a several-celled, dry, dehiscent pericarp.

312. The Pyxis is a capsule that opens transversely (296)

313. The Samara is a leathery or membranous fruit, of one or more cells, much compressed, & prolonged laterally into wings

314 The Cremocarp is composed of a pair of Achenia, placed face to face, & separating from a central axis; as in all Umbelliferae

315. The Siliqua consists of two carpels fastened together, the placentae of which are parietal, & separate from the valves, remaining in the form of a replum or frame, & connected by a membranous expansion

316. When the Siliqua is very short it is called a Silicula

317. The Nut or Gland is a dry, bony, indehiscent one-celled fruit, proceeding from a pistil of three cells, & enclosed in an involucre called a Cupule

318. The Berry is a succulent fruit, the seeds of which lose their adhesion when ripe, & lie in a loose pulp.

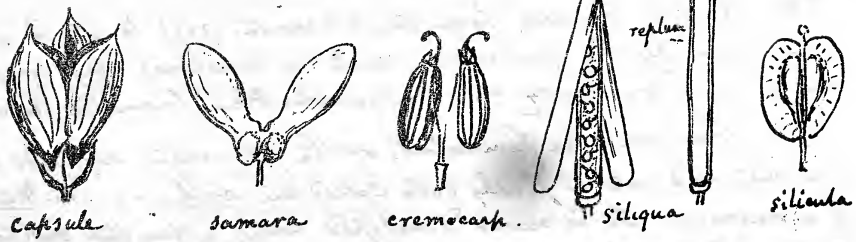
319. The Orange consists of several membranous carpels, filled with pulpy bags, & surrounded with a thick indehiscent rind

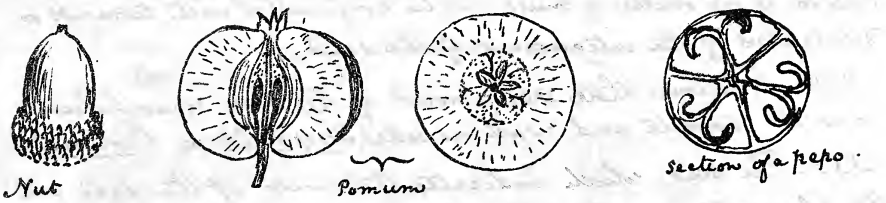
320. The Pome or Apple consists of several united carpels surrounded by the enlarged & fleshy tube of the calyx, with which they firmly cohere

321. "The Pepo is a fleshy inferior fruit, either indehiscent or bursting ~~circularly~~ irregularly, & consisting of about three carpels, each of which is divided into two cells by its placentiferous margin being so introflexed as to reach the dorsal suture" Arnott.

322. The Balausta is a many-celled fruit, with the seeds arranged in an irregular manner on the backs of the cells, & is formed by more whorls of carpels than one, enclosed within a tough rind; as in the Pomegranate

Fruit.





323. The most remarkable modifications of multiple or anthocarpous fruits are, the Cone, Pine-apple, & Fig.

324. The Cone is an indurated amentum ( ): as in the Pine-tribe When it is much reduced in size, & its ocales firmly cohere, it is called a Galbulus

325. The Pine-apple is a spike of inferior flowers, which all grow together into a fleshy mass.

326. The Fig is the fleshy, hollow, dilated apex of a pedunele, within which a number of flowers are arranged, each of which contains an achenium.

327. In Dorstenia the dilated apex of the peduncle is flat & open

XVII. Seed.

328. The seed is the ovule arrived at maturity. It consists of integuments, albumen, & embryo; & is the result of the reciprocal action of the stamens & pistils

329. In general, seeds are, like ovules, enclosed within a covering arising from a carpellary leaf (244); but Gymnosperms are exceptions. Moreover some ovules rupture their ovary as they grow, & thus become naked seeds: as in Leontice. Others have their ovary only partially closed; as in Mignonette

Seed

330. The seed proceeds from the placenta (247) to which it is attached by the funiculus, which is sometimes very long, but is more frequently not distinguishable from the placenta

331. Sometimes the funiculus, or the placenta, expands about the seed into a fleshy body called the aril. e.g. the Mace of a nutmeg. It is never developed until after the vivification of the ovule, & must not be confounded with tumours or dilatations of the integument of the seed.

332. Sometimes there are tumours of the testa near the hilum, or at the opposite end; such are called Strophiolae or Carunculae

333. The scar, which indicates the union of the seed with the placenta, is called the hilum or umbilicus.

334. The integuments are collectively called testa, & consist of membranes resulting from the sacs of the ovule

335. Sometimes the testa is covered by a hair-like expansion of its whole surface; as in the Cotton: or these hairs occupy one or both ends, when they constitute what is called the coma. This must not be confounded with pappus (307) which is calyx

336. The integuments are often expanded into wings, which are either single or several, & appear intended to render the seeds buoyant. Very often they are corky or spongy & not unfrequently consist of spiral cells.

337. The membranes of the seed are called by various names, of which the most frequently used are spermoderm or testa for the primine; mesosperm for the secundine; & endopleura for the coat of the nucleus (267)

338. The mouth of the foramen (269) is often distinctly visible, & is named the micropyle.

339 The raphe is in no way connected with impregnation its functions being apparently confined to maintaining a vascular connection between the placenta & the base of the nucleus, for the purpose of nourishing the latter.

340 Where vessels of the raphe expand into the mesosperm the chalaza appears, as a coloured thickening of the integuments

341. The micropyle always indicates the place in a seed to which the radicle points.

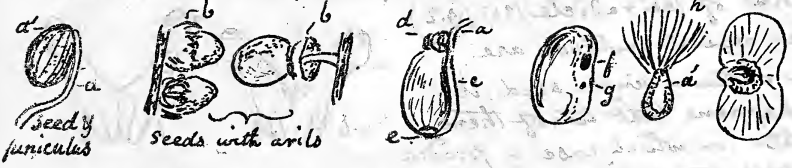
342. And the chalaza is as constant an indication, when it is present, of the situation of the cotyledons.

Seed

342. Between the integuments of the embryo of many seeds lies a substance called the albumen or perisperm.

343. It consists of a peculiar matter deposited during the growth of the ovule among the cellular tissue of the nucleus It is solid when uniform perfectly blended with the cellular tissue; & ruminated when a portion of the tissue remains unconverted

344 Albumen is usually wholesome, & may be frequently eaten with impunity in the most dangerous tribes.

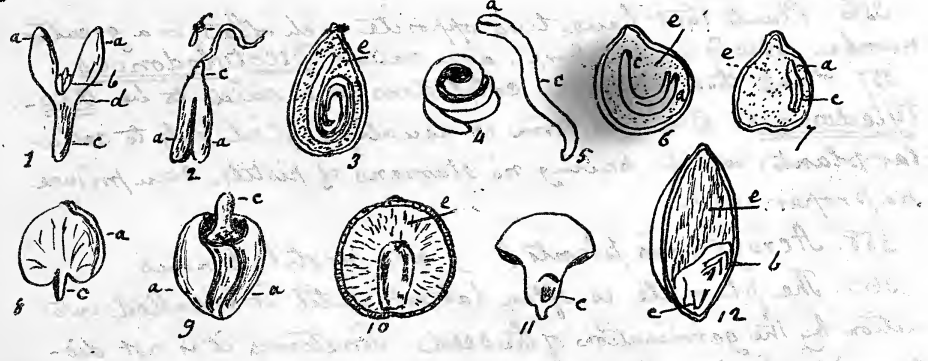


a. seed; a. funiculus; b. arils; c. rapho; d. strophiole; e. chalaza; f. hilum; g. micropyle; h. coma

345. The organized body that lies within the seed, & for the purpose of protecting & nourishing which the seed was created, is the Embryo. This organ was originally included within the sac of the amnois ( )

346. The latter is usually absorbed or obliterated during the advance of the embryo to maturity, but it sometimes remains surrounding the ripe embryo, in the form of Vitellus; as in Pepper.

347. The embryo consists of the cotyledons, the radicle, the plumule, & the collar



a. cotyledons; b. plumule; c. radicle; d. collar; e albumen; f. suspensor

Fig. 1. straight embryo; 2. embryo with suspensor; 3. albuminous seed with spiral embryo; 4. helical embryo; 5. vermicular embryo; 6 seed with curved embryo; 7. excentric embryo; 8. embryo with foliaceous cotyledons; 9. convolute cotyledons; 10. embryo in the axis of albumen (The preceding are all dicotyledonous embryos)

Fig. 11. Fungiform monocotyledonous embryo; 12. ~~Section~~ Seed of a grass.

Seeds.

247. The cotyledons represent undeveloped leaves

248. The plumule or gemmule is the part that is destined to become the ascending axis ( )

249 The radicle is the rudiment of the descending axis.

250. The collar is the line of separation between the radicle & the cotyledons. The space between the collar & the base of the cotyledons. is called the caulículus.

251. In some seeds the embryo is furnished with a suspensor from the point of the radicle (347. fig. 2.)

352. When several embryos are produced within a single seed, it sometimes happens that two of them grow together in which case a production analogous to animal dicephalous monsters is formed: as in the Mistletoe. . . . a) Radicle ; b) cotyledons.

353. The number of cotyledons varies from one to several. The most common number is either one or two. In the latter they are (with rare exceptions), placed directly opposite each other

354. The direction of the embryo with respect to the seed will depend on the relation that the integuments, raphe, chalaza, hilum & micropyle, bear to each other.

355. Plants that have but one cotyledon to the seed, or, if two, with the cotyledons alternate with one another, are called Monocotyledonous.

356. Plants that have two opposite each other, or a greater number placed in a whorl, are called Dicotyledonous.

357. Plants that have no cotyledons are said to be Acotyledonous. But this term is usually applied only to cellular plants, which, having no stamens & pistils, can produce no proper seeds

358. Acrogenous plants ( ) are acotyledonous

360. The plumule is often latent until it is called into action by the germination of the seed. Sometimes it is not distinguishable from the cotyledons: at other times (as in Indian corn) it is highly developed & lies in a furrow of the cotyledon. In the monocotyledonous embryo it frequently happens that the plumule is rolled up in the cotyledon, the margins of which

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* 359. There are a few flowering plants that produce seeds with the cotyledons either consolidated or abortive, & hence appear to be acotyledonous.

grow together, so that the whole embryo forms one uniform mass. (347, fig 12.); but as soon as germination commences, the margins separate.

361. The radicle elongates downward, either directly from the base of the embryo, or after previously rupturing the integument of the base.

362. When the seed is called into action, germination takes place. The juices which were before insipid, immediately afterwards abound in sugar (as in Barley); & growth commences.

363. The growth in the first instance is caused by the absorbtion & decomposition of water, the oxygen of which combines with the superfluous carbon of the seed, & is expelled in the form of carbonic acid gas.

364. As this phenomenon does not take place in full grown plants, except in the dark ( ), so neither can it occur in seeds, except under the same condition. Hence an embryo exposed to constant light, would not germinate at all; & hence the care taken by nature to provide a covering to all embryos, in the form of the integuments of the seed, or of a pericarp.

365. As soon as the necessary proportion of carbon is removed from a seed by the expulsion of carbonic, the young plant begins to absorb food, & to grow by the processes of assimilation & respiration already described.

Acrogens, or Flowerless Plants.

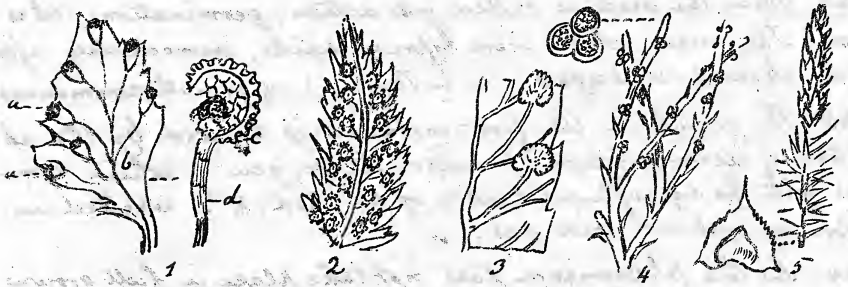
366. Many plants are flowerless, or destitute of organs furnished with stamens & pistils; so that they are not increased by seeds. Such are propaged by what are called organs of reproduction, which have no other analogy with the organs of fructification except that both perpetuate the species.

367. The reproductive organs of flowerless plants vary according to the tribes of that division of the vegetable kingdom; & have so little relation to each other, that each principal tribe may be said to have its own peculiar method of propagation.

368. They all agree in their reproductive parts or spores, which are analogous to seeds, not germinating from any fixed point, but producing root or stem indifferently from any point of their surface. This germination is therfore vague.

369. The principal tribes are Ferns, Mosses, Lichens, Algæ, & Fungi.

370. Ferns are increased by little bodies called spores, enclosed within cases named thecæ or sporangia, which often grow together in clusters or sori, from the veins of the under sides of the leaves, or from beneath the epidermis. The latter, when it encloses the thecæ, is termed the indusium.



1 Portion of the frond of a fern, a, a sori enclosed in an indusium; b. the veins of the frond; c. theca, surrounded with an annulus; d. stipe of the annulus 2. Portion of a frond, exhibiting sori covered with an indusium. 3. The same; the indusium reniform. 4 Branched stem of a fern, with scaly leaves & 3-celled thecæ. 5. Branch, & spike of fructification; the latter consisting of imbricated scales, under each of which is a theca

371. The indusium separates from the leaf in various ways, in consequence of the growth of the thecæ beneath it.

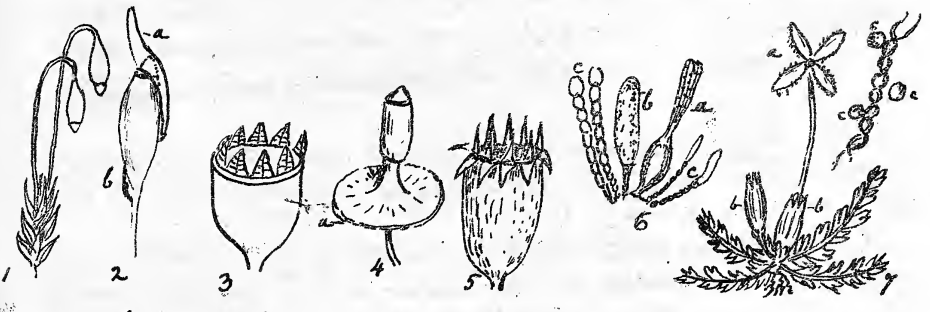
372. The thecæ have frequently a stalk (fig. 1. d.) which passes up one side, & finally curving with their curvature, disappears on the opposite side. This surrounding portion is called the annulus

373. These thecæ may be considered as minute leaves, having the same gyrate mode of development as the ordinary leaves of the tribe: their stalk or stipe is the petiole, the annulus the midrib, & the theca itself the lamina, the edges of which are united. They would therefore be analogous to carpels, if it appeared that they were influenced by the action of any vivifying matter.

374. Mosses (in which, considered as a tribe we may include the liverwort or Hepaticæ) are increased by spores contained within an urn, or theca, or sporangium, placed at the summit of a stalk or seta, & in true mosses bearing at its apex a kind of loose hood, called a calyptra, & closed by a lid or operculum.

375. The inside of the theca of true mosses has a central axis or columella, & the orifice beneath the operculum is closed by teeth-like

processes, or a membrane, called the peristome.



1, Moss & theceæ; nat. size. 2, Theca with calyptra. 3, Theca with single peristome. 4, Theca with apophysis (a.) 5 Theca with double peristome. 6. Young theca (a) called pistillidium, with a club-shaped body (b.) called a staminidium, & articulated threads, which are, perhaps, abortive staminidia. 7. Plant of Jungermannia (ord. Hepaticæ); a, 4-valved theca; b. involucre; c. spora.

376. At the base of the theca is sometimes found a tumour, or struma, fig. 2. b. or an equal expansion named apophysis (4. a)

377. The number of the teeth of the peristome is always some multiple of four.

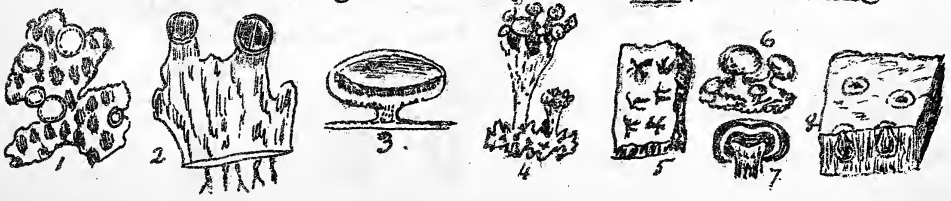
378. The calyptra grew originally from the base of the stalk, but when the latter lengthened, the calyptra was torn away & carried up on the top of the theca

379. The calyptra may be regarded as as a convolute leaf; the operculum, another; the peristome, one or more whorls of minute flat leaves; & the theca itself as the excavated distended apex of the stalk, the cellular substance of which separates in the form of sporules.

380. There are also in mosses certain organs, called anthers by some, which do not appear to be analogous to the bodies so named in flowering plants, & the nature of which has not been demonstrated. They are jointed filaments, staminidia or antheridia, containing vibrios (animalcules) lodged in mucous cells, & surround the rudiment of the future theca (fig. b).

381. Lichens are cellular expansions, usually horizontal, but occasionally perpendicular, consisting of a thallus, or combination of stem & leaves, upon which shields, apothecia, or reproductive organs, appear.

382. The shields consist of a margin, enclosing a kernel (nucleus), in which tubes containing sporules, & called asci, are imbedded



Acrogens or Flowerless Plants.

Shields vary a little in their nature, & some of the forms have received particular names, such as scutellum (f.g. 1, 2 & 3); tuberculum (6); lirella (5); a stalk-like elongation of the thallus is called a podetium (7), & a cup-like expansion is called a scypha (4.)

383. Algæ are submerged plants, consisting entirely of cellular tissue, & propagated by spores lodged in various parts of the system.

384. The spores either lie freely in the whole substance of the plant, or are collected in particular cells, or occupy jointed filaments, or are placed in spheres, occupying the circumference of expansions of the thallus (381). There are also other modes of multiplication.

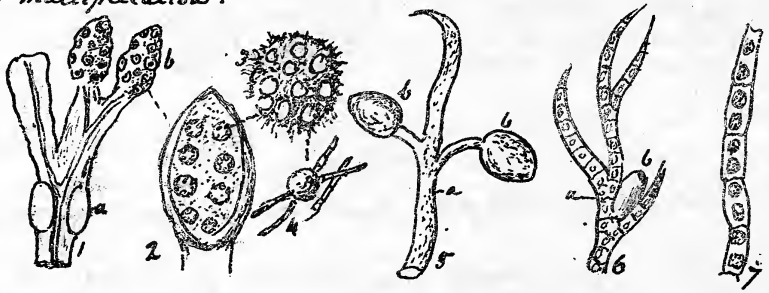
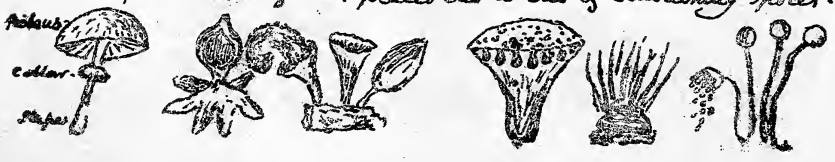


Fig. 1. Fucus vesiculosus, a, air bladders, b, reproductive organs, 2. magnified view of Fig. 1, b.; Fig. 3. cluster of spores, Fig. 4. single spore with jointed filaments
Fig. 5. Vaucheria geminata, & spore-cases
Fig. 6. Hutchinsia, with two kinds of fructification, viz. spores lodged in the joints of the frond (a), & collected in ovate receptacles (b).
Fig. 7. a Conferva, with green (reproductive) matter collected into globules.

385. Fungi constitute the lowest form of vegetation. They are cellular, but some of the cells contain spiral threads. They are propagated by spores. In the highest forms, two kinds of organs are detected: one cystidia, or conical naked elevations; the other basidia, which are also conical elevations, but they bear spores in definite number on their apex.

386. The highest forms of the fungi consist of a stipes, an annulus or collar, a pileus or cap, & an hymeneum. Some have sporules enclosed in asci (382). The lowest forms are reduced to a mere peridium or integument containing reproductive matter; or consist of cells placed end to end & containing spores.



II. Systematical Botany.

387. Systematical Botany is the science of arranging plants in such a manner, that their names may be ascertained, their affinities determined, their true places in a natural system fixed, their sensible properties judged of, & their whole history elucidated with accuracy & certainty. Any thing short of this is not a system, but an artificial scheme

388. The latter is intended to enable a person to ascertain the name of a plant, & goes no further. But as the name conveys no information by itself: the power thus acquired by artificial schemes is of but little real value, & cannot be considered as anything beyond a very imperfect & elementary mode of investigation

389. In a natural arrangement, the name of a plant is the least object that is gained. any investigation of its principles, is of necessity attended with the discovery of the relationship a given plant bears to others; & as plants that are closely akin in structure are also most similar in their sensible properties, it often enables us to judge of the use of an unknown plant whose place is determined in the system, by the ascertained qualities of those species in whose vicinity it takes its place by virtues of its natural affinities

390. The only artificial schemes in general use are, 1, that of Linnaeus, the characters of which are based on variations in the Stamens & pistils; & 2, the Analytical method. The former is now scarcely ever used by scientific botanists

391. The analytical Method is founded upon the common process of analysis that is unconsciously employed by the human mind. In all cases the mental operation by which one thing is distinguished from another, consists in a continual contrast of characters. For instance, in a mass of individual objects we distinguish one set which is colored, & another which is colorless; of those that are colored, we distinguish red, black, blue & green; of the red, some are square, others are round; of the round, some are sculptured on the surface, others are even; & so we proceed, analysing the subject by a constant series of contrasts, until we arrive at a point beyond which no analysis can go

III. The Natural System.

392. The true Natural System, whenever it shall be discovered, will represent the species, genera, orders, alliances, groupes, subclasses, & classes of plants, or whatever other divisions may be admitted into it, so arranged, that each plant shall stand next those to which it is more nearly allied in structure than to any others.

393. But the skill of man has not yet attained this end: no system answering to this description has been devised, nor does there appear any probability that it will be discovered till our knowledge of plants is much more advanced.

394. All the so-called natural systems, up to the present day, partly artificial & partly natural. The lower & higher divisions in them are natural, the intermediate divisions are artificial. In other words, the stones of the edifice are hewed & squared, & the general plan is drawn out, but no builder has yet been found with skill to put them together so as to form a consistent whole.

395. But although in theory no system that can properly be called natural has yet been devised, yet for practical purposes many answer to the name, & fulfil the principal conditions required of them.

396. The general & natural orders can alone be considered as agreed upon by botanists, the other divisions are unsettled; & this is the reason why the natural orders seldom follow in the same ~~order~~ manner in the arrangements of two different botanists.

397. There is no such thing as an arrangement which shall express the natural ~~arrangements~~ relations of plants in a consecutive series. It seems to be generally admitted that each species is allied to many others in different degrees, & that such relationship is best expressed by rays (the affinities) proceeding from a common centre (the species). In like manner, in studying the mutual relationship of the several parts of the vegetable kingdom, the same form of distribution is constantly seen; genera & orders being found to be, as it were, the centre of spheres, whose surface is only defined by the point where the last traces of affinity disappear

398. But although the mind may conceive of such a distribution of organized beings, it is impossible to present it to the eye, and

all attempts at effecting that object have failed.

399. The fundamental principle of systematic botany is, that those plants should be stationed in company with each other which have the greatest degree of affinity; & that those should be placed most remotely which have the smallest degree of affinity.

400. Affinity is an accordance in all essential characters.

401, From this is distinguished analogy, which is a conformity in one or two characters only.

402. What we call the characters of plants are merely the signs by which we judge of affinity; & all the groups into which plants are thrown are in one sense artificial, inasmuch as nature recognises no such groups. Nevertheless, consisting in all cases of species closely allied in nature, they are in another sense natural.

403. But as the classes, subclasses, groups, alliances, natural orders & genera of botanists have no real existence in nature, it follows that they have no fixed limits, & consequently that it is impossible to define them with precision.

404. If a system is ever to be devised which shall be natural in all its parts, as far as human means can make it so, this will be brought about by settling the relative value of the characters by which plants are limited, & by introducing uniformity & consistency into the distinctions of the groups, whether inferior, superior, or intermediate

405. The following propositions seem incontrovertible:-
1. Nothing that is constant can be regarded as unimportant.
2. Every thing constant must be dependent upon, or connected with some essential function. Therefore all constant characters, of whatever nature, require to be taken into account in classifying plants according to their natural affinities

405. On the other hand, whatever points of structure are variable in the same species, or in species nearly allied to each other, or in neighboring genera, are unessential to the vital functions, & should be set aside, or be regarded as of comparative unimportance.

406. Those peculiarities of structure which are connected

with the manner in which a plant is developed are physiological.

407. Those peculiarities of structure which are connected with the manner in which parts are arranged are structural

408. Physiological characters are of two kinds; 1, those which are connected with the mode of growth (or organs of vegetation), & 2, those which regulate reproduction (or organs of fructification).

409. Physiological characters are of greater importance in regulating the natural classification of plants than structural.

410. All modifications of either are respectively important, in proportion to their connection with the phenomena of life.

411. The internal or anatomical structure of the axis & of the foliage is of more importance than any other character; because these are the circumstances which essentially regulate the functions of growth, & the very existence of the individual.

412. The next in order is the internal structure of the seed, by which the species must be multiplied.

413. Next to this must be taken the structure of the organs of fructification, by whose united action the seed is called into being; for without some certain, uniform, & invariable action on their part, the race of a plant must become extinct.

414. On the other hand the floral envelopes ( ), the number, form, & condition, the presence or absence, the regularity or irregularity, seem to be unconnected with functions of a high order, & to be designed rather for the decoration of plants, or for the purpose of giving variety to the aspect of the vegetable world; they are consequently of low & doubtful value, except for specific distinctions.

415. The consolidation of parts of fructification is a circumstance but little attended to in a general point of view, except in respect to the corolla; but it probably deserves to be regarded with great attention

416. If consolidation, is on the one hand, to be regarded as a character of high importance, so must disunion also be so considered on the other

417. Beyond these points no fixed rules have been discovered for judging of the value of the subordinate peculiarities of plants; & the employment of secondary characters is in a great degree arbitrary.

IV. The Natural System of De Candolle.

Many natural systems have been proposed by different botanists. Ray, Linnaeus, Jussieu, De Candolle, Bartling, Endlicher, Lindley & others have each had their own system; & perhaps the best character that can be given of them is, that while they are all far from the truth, each has some merits which the others want.

The system of De Candolle, however, having been taken as the basis of the most perfect enumerations of plants that has ever been made, we shall give the characters of his principal divisions, & arrange our list of medicinal plants according to the natural orders as he has disposed them.

Plants are either furnished with visible flowers, or they are multiplied in some other way. Hence the two great divisions, of Flowering (Phaenogamous or Phanerogamous); & Flowerless (Cryptogamous).

Flowering plants are either Exogens ( ) or Endogens. ( ), with which Dicotyledons (.) & Monocotyledons ( ) respectively correspond.

Flowerless plants are Rhizogamous (Semivascular), that is furnished with stomates & vascular tissue; or they are Amphigamous (Cellular), that is, destitute of stomates and entirely ~~vascular~~ cellular.

Hence arise four Clafses

1. Flowering Plants.

Clafs 1. Exogens or Dicotyledons

Clafs 2. Endogens or Monocotyledons

II. Flowerless Plants.

Clafs 3. Rhizogamous or Semivascular

Clafs 4. Amphigamous or Cellular.

The principal subdivisions of these clafses will be found in the following list of medicinal plants.

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The following list embraces the more important plants from which materials employed medicinally or for food are obtained. Those that are natives of North America are underscored: thus, Baptisia tinctoria. If the plant is merely naturalized in North America, the mark § is added: thus, Conium maculatum. §.

The names of the most valuable plants are written in larger letters than usual: thus Papaver somniferum; while those of doubtful or feeble powers are indicated by this mark (†) e.g. Scutellaria lateriflora†

The following abbreviations are used for countries; viz.:—
Eu. for Europe; Af. Africa; As. Asia; E.I. East Indies; W.I. West Indies; S.A. South America; N.H. New Holland; C.G.H. Cape of Good Hope.

The generic names have numbers prefixed to them, & are underscored with a double line: the English generic name (when there is any) follows immediately after.

Class I. Exogenae. (.)

Subclass I. Thalamiflorae.

Flowers furnished with a calyx & corolla. Petals distinct. Stamens hypogynous ( ).

Order Ranunculaceae. The Crow-foot Tribe.

1. Ranunculus. (Crowfoot). nearly all the species of this extensive genus possess powerfully acrid, rubefacient & vesicatory properties. The principal species used are R. bulbosus†, Sceleratus†, acris†, Flammula, repens, & hortensis. The juice of R. Thoracis is used to poison weapons.

2. Adonis. (Pheasant's eye) vernalis, Eu. Emmenagogue.

3. Knowltonia vesicatoria. C.G.H. Leaves used as vesicants.

4. Hydrastis Canadensis (Yellow-root). Rhizoma yellow; a tonic bitter.

5. Anemone (Wind-flower) Pulsatilla, Eu. Extract used in taenia. hortensis, Eu., Coronaria Eu. & nemorosa Eu. are all highly acrid.

6 Hepatica (Liver-wort) triloba, Eu.† used as a remedy for hemorhage.

7 Clematis (Virgin's bower) erecta, Eu., Flammula, Eu., Vitalba, Eu., are acrid & vesicant. C. Virginiana is diaphoretic & diuretic.

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8. Helleborus (Hellebore) niger, Eu.; viridis, Eu.; foetidus, Eu.: all narcotic & acrid. Used as hydrogogue cathartics, & emmenagogue. The last is also employed as a remedy against ascarides

9 Coptis trifolia. Its rhizoma is a tonic bitter without astringency

10. Nigella sativa, Eu. Seeds aromatic & carminative: somewhat acrid

11 Delphinium (Larkspur) consolida, Eu. acrid; seeds emetic

D. Staphisagria, Eu. Seeds very poisonous, emetic, drastic. Used for scabies, & for killing lice.

12. Aconitum (Wolfsbane) Lycoctonum, Anthora & paniculatum are narcotic & acrid; particularly the root. All natives of Europe.

A. Napellus, Eu. more powerful than the preceding. The tincture of the leaves useful in rheumatic & neuralgic affections. It blunts the sense of pain.

A. uncinatum, & A. reclinatum (n.sp. Gray in Sill. Jour.) probably active.

13. Actaea (Baneberry) spicata, Eu. Fruit poisonous. Root antispasmodic expectorant & astringent.

A. alba (White Cohosh) & rubra (Red Cohosh) The roots are mild astringents & tonics

14. Cimicifuga (Bugbane) racemosa (Black snakeroot) Root tonic & astringent: also diaphoretic & expectorant.

15. Xanthorhiza apiifolia (Yellowroot). Root, wood, & bark intensely bitter & tonic

16. Paeonia officinalis & corallina, Eu.: Seeds emetic & cathartic

Order Anonaceae. The Custard Apple Tribe.

17. Xylopia longifolia, S.A. Fruit a valuable febrifuge

X. glabra, W.I. Wood bark & berries warm & bitter.

18. Habzelia Aethiopica (Piper Aethiopicum of Commerce) Af. Spicy.

H. aromatica, Guiana. Fruit pungent & aromatic

19. Monodora myristica, W.I. (American nutmeg) Seeds like nutmegs.

Order Menispermaceae. The Moonseed Tribe

20. Cocculus Bakis Af.; Fibraurea, China. Roots diuretic & very bitter

C. cinerascens, S.A. a Brazilian remedy for fevers.

C. crispus, E.I. Whole plant bitter: used in intermittents.

C. cordifolius E.I. Root a celebrated tonic in India.

C. palmatus (Kalumb or Calumba - vulgarly Columbo) Af. Tonic

21. Pereiria medica. Ceylon: Root tonic & stomachic.

22 Anamirta Cocculus, E.I. The seeds are Cocculus Indicus of Commerce; a well known poisonous drug.

23. Menispermum Canadense. Root tonic & diuretic.

24 Abuta rufescens. Guiana. The root is White Pareira Brava a tonic.

Other genera & species of this order are more or less bitter & tonic.

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Order Berberaceae. The Barberry Tribe.

25. Berberis vulgaris § Eu. (Common Barberry) Fruit acid: bark astringent
26. Leontice thalictroides (Blue cohosh. Papooseroot). Bitter diuretic
The seeds when roasted are a pretty good substitute for coffee
27. Jeffersonia diphylla (Twin-leaf). Stimulant, diaphoretic, antispasm.
28. Podophyllum peltatum, (May apple). Hydrogogue cathartic.

Order Nymphaeaceae. The Water-lily Tribe.

The large root-stocks of this order are astringent & slightly narcotic
The N. American genera & species are chiefly the following: viz.
29. Nuphar lutea, advena & sagittaefolia. (Yellow Pond-Lily)
30. Nymphaea odorata (White Pond-lily).

Order Nelumbiaceae. The Lotus Tribe.

31. Nelumbium luteum. Rhizoma farinaceous: the nuts also, edible.

Order Dilleniaceae.

Plants of this order are generally astringent: none are yet officinal

Order Magnoliaceae. The Magnolia Tribe.

32. Magnolia glauca. (Swamp magnolia). Bark bitter & aromatic.
M. acuminata. Gently stimulant, tonic & aromatic.
33 Liriodendron tulipifera (Tulip-tree) Bark stimulating tonic.

Order Winteraceae. The Winter's-Bark Tribe.

34 Illicium Floridanum. Seeds aromatic stimulant.
35 Drimys Winteri, S.A. (Winter's bark) Aromatic tonic.

Order Cruciferae. The Cabbage Tribe.

A very large order. All the species are harmless: most of them are more or less pungent & antiscorbutic. The pungency is volatile.
36. Cochlearia officinalis (Scurvy grass) Eu
C. Armoracia, Eu. (Horse-radish)
37. Cardamine pratensis, Eu. (Cuckoo-flower). Stimulant & diuretic
38. Sinapis nigra § Eu. (Black mustard) Seeds acrid, stimulating & bitter
Oil purgative; rubefacient; vesicant.
39. S. alba § Eu. (White mustard) Seeds acrid: stimulating cathartic.
40. Raphanus Sativus § Eu. (Radish) Seeds emetic: roots diuretic.

Order Capparidaceae. The Caper Tribe.

41. Capparis spinosa Eu The young flower buds are the capers of the shops

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Order Papaveraceae. The Poppy Tribe.

42. Papaver somniferum. Eu. (medicinal poppy) The Dried juice of the half ripe capsules, is opium. The oil of the seeds is bland & inactive.

43. Chelidonium majus §. Eu. Juice an acrid poison: Cures warts.

Order Cistaceae. The Rock-rose Tribe.

44. Cistus Creticus, Eu. Produces the gum-resin Ladanum: a stimul. & emmen.

Order Violaceae. The Violet Tribe.

The roots of most are emetic

45. Ionidium Ipecacuanha & Poaya, of Brazil produce roots that are often substituted for true Ipecacuanha. Other species are powerful emetics & purgatives

Order Polygalaceae. The Milk-wort Tribe.

46. Polygala Senega (Seneca Snake-root). Root stimulating expectorant & diuretic

Order Malvaceae. The Mallow Tribe.

47. Althaea officinalis § Eu., (Marsh-mallow), mucilaginous & emollient. Similar properties exist in most of this tribe

48 Gossypium herbaceum &c §. As. The wool of the seeds is cotton.

Order Tiliaceae. The Linden Tribe.

49. Tilia Americana (Linden or Bass wood). The bark emollient & mucilag.

Order Dipteraceae.

50. Dryobalanops aromatica. Sumatra & Borneo. Yields Sumatra camphor.

Order Aurantiaceae. The Orange Tribe.

The juice of the fruit usually abounds in citric acid, & sometimes in sugar.

51 Citrus Aurantium yeilds the Sweet Orange; C. Bigaradia the Seville Orange; C. Limetta is the bergamot; C. Limonium yields the Lemon

Order Hypericaceae. The St Johnswort Tribe

52. Hypericum perforatum § Eu. (Common St. John's wort). Leaves astringent.

Order Guttiferae.

53. Hebradendron Cambogioides (Ceylon Yields Gamboge (See Graham & Christison in Compan. to Bot. Mag. 2. pp. 193 & 233)

54 Calophyllum Calaba, W.I. Yields the resinous juice Tacamahaca.

The general properties of the order are acrid & purgative.

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Order Aceraceae. The Maple Tribe.

55. Acer saccharinum (Sugar maple) & A. nigrum (Black maple) yield maple sugar. The bark of A. rubrum is a good astringent.

Order Ternstramiaceae. The Tea Tribe.

(This should have been placed after Aurantiaceae)

56. Thea viridis yields Green tea & T. Bohea, Black tea. Both from China

Order Cedrelaceae. The Mahogany Tribe.

57. Swietenia Mahogani, W.I. (Mahogany tree) The bark is a tonic
58. Soymida febrifuga, E.I. Bark tonic & astringent
59 Cedrela Toona. E.I. Bark a powerful astringent & tonic. - not bitter.

Order Meliaceae. The Pride of India Tribe.

60. Melia Azedarach & E.I. Root bitter & nauseous; anthelmentic
61 Guarea Aubletia & trichilioides, W.I. bark purgative & emetic

Order Vitaceae. The Vine Tribe.

62. Vitis vinifera (Grape vine) As. Fruit cooling & antiseptic; diuretic & laxative in large quantities: Raisins more laxative than the fresh fruit
The N. amer. species produce wine, - but not raisins
63. Ampelopsis quinquefolia (Virginian creeper). Expectorant

Order Geraniaceae. The Geranium Tribe.

64. Geranium maculatum. Root a powerful astringent

Order Balsaminaceae. The Balsam Tribe.

65. Impatiens pallida & fulva. Emetic, cathartic & diuretic.

Order Linaceae. The Flax Tribe

66. Linum usitatissimum, Eu. As. The seeds demulcent, & for cataplasms.

Order Oxalidaceae The Wood-sorrel Tribe.

67. Oxalis - a numerous genus - all acid; containing binoxalate of potasa.

Order Rutaceae. The Rue Tribe.

Most of the species contain powerfully scented oils.
68. Ruta graveolens (Common Rue) Eu. anthelmintic, sudorific & emmenag.
69. Cusparia febrifuga, S.A. (Angostura bark) Valuable febrifuge
70. Barosma crenulenta, serratifolia & crenata. C.G.H (Diosma, Buchu)
Leaves an excellent aromatic, stomachic & efficacious diuretic

Order Xanthoxylaceae

71. Xanthoxylum Clava Herculis, W.I. Bark sudorific & detergent.
X. americanum & Carolinianum (both called Prickly ash). Stimulant, diaphoretic & subaromatic. Used in chronic rheumatism.
Other species, of similar powers, grow in Asia.
72. Ptelea trifoliata (Shrubby trefoil) Fruit a substitute for hops.
73. Brucea antidysenterica, Abyssinia. Bark tonic & astringent

Order Zygophyllaceae.

74. Guaiacum officinale, W.I. (Lignum vitae) Yields a stim. gum-resin.

Order. Simarubaceae. The Quassia Tribe

75. Quassia amara, E.I. Wood an intense pure bitter
76 Simaruba amara, W.I. Bark of the root a powerful bitter
77. Picraena excelsa, W.I. The wood yields most of the Quassia chips

Subclass II. Calyciflorae

Flowers furnished with a calyx & corolla. Petals distinct. Stamens perigynous ( )

Order Celastraceae

78. Celastrus scandens (False Bittersweet) Narcotic, stimulant

Order Rhamnaceae. The Buck-thorn Tribe.

79. Rhamnus catharticus & Eu (Common Buckthorn), Frangula &c. The berries active cathartics
80. Zizyphus Œnoplia E.I. Fruit acid.
Z. Jujuba & vulgaris, E.I. The fruit is Jujube
81 Ceanothus Americanus, (N. Jersey Tea). Bark of twigs astringent

Order Anacardiaceae. The Cashew Tribe.

82. Rhus (Sumac) Toxicodendron, vernicifera, Japan & venenata. are acrid poisons to many persons. The berries of R. glabrum & typhinum yield bimalate of lime, an agreeable acid.
83. Pistacia vera, S. Eu. Fruit emollient. Produces Pistacia nuts
P. terebinthus, S. Eu. Yields Cyprus turpentine
P. Lentiscus. S. Eu. Yields the resin called Mastic.
84. Anacardium occidentale, E & W.I. The fruit is the Cashew-nut the coats of which contain a caustic oil. The fleshy pedunele is edible.

Order Leguminosæ. The Bean Tribe

85. Baptisia tinctoria, Cathartic, emetic & subastringent. An ointment made of the bark of the root useful in some forms of Herpes.

86. Cytisus Laburnum, Eu. (Common Laburnum) Seeds narcotico-acrid.
C. scoparius, Eu. (Common Broom) Shoots diuretic & cathartic; seeds emetic.

87. Indigofera (Indigo). The common indigo is produced by I. tinctoria, E.I. The blue dye of this & other species is a dangerous poison.

88. Glycyrrhiza glabra, Eu. (Liquorice). Roots sweet, tonic, demulcent: the solid extract is common liquorice.

89. Piscidia Erythrina, W.I. (Jamaica Dogwood) Bark narcotic & diaphoretic

90. Colutea arborescens, Eu. (Bladder Senna) Leaves purg., used for adulterating Senna

91. Astragalus verus, Persia. Yields most of the Tragacanth of commerce
A. Tragacantha De Candolle says produces no Tragacanth.

92. Alhagi Maurorum, Egypt, As. (Camel's Thorn) Produces a kind of manna

93. Ervum Ervilia, Eu. (Bitter vetch). Seeds poisonous.

94. Abrus precatorius (Wild Liquorice) E.I. Af. & W.I. Infusion of extract of the root & leaves used instead of Liquorice

95. Mucuna pruriens, W.I. (Cowitch) The medicinal article consists of the strong stinging hairs of the pods.

96. M. Prurita, E.I. Resembles the preceding.

97. Pterocarpus erinaceus Af. Produces Kino, a powerful astringent
P. Marsupium, E.I. Also produces a good resin like Kino
P. Draco, W.I. The dried resinous juice formerly called Dragon's Blood.
P. Santalinus, E.I. produces Red Sandal Wood.

98. Cassia elongata, India. Produces the finest (Tinnevelly) Senna
C. acutifolia, Egypt. Produces Alexandrian Senna
C. lanceolata, Arabia. True Senna of Mecca
C. obovata, Af. As. Produces Black-leaved Senna, an inferior kind.
C. Marilandica, (American Senna) Leaves an excellent purgative

99 Cathartocarpus Fistula, E.I. Af. W.I.S. Produces Cassia pods, the pulp between the seeds of which is a gentle laxative.

100. Haematoxylon Campeachianum, W.I. Produces Logwood

101. Tamarindus Indica, E.I. & W.I. Produces Tamarinds.

102. Hymenaea W.I. & S.A. The resin (a kind of Copal) tonic & subastring. Fruit purgative; bark anthelmintic

103. Acacia Catechu E.I. Yields Bengal Catechu: astringent.
A. Arabica, E.I. & Arabia. The bark yields Gum Arabic.

Order Saxifragaceæ. The Saxifrage Tribe

104. Heuchera Americana (Alum-root) A powerful astringent.

Order Rosaceae. The Rose Tribe

105. Geum (Avens) rivale, Eu. Stomachic. Useful in diarrhoea
G. urbanum, Eu., G. virginianum, & other species - astringent.
106. Agrimonia Eupatoria, Eu. (Common Agrimony) astringent; anthelmint.
107. Rubus villosus (Blackberry) Bark of the root a valuable astringent
R. Canadensis (Low Blackberry) Tonic & astringent
108. Rosa (Rose) centifolia, Caucasus. Petals used for making Rose water.
" R. Canina (Dog-rose) Eu. This, & allied species used for making conserve of Roses. The pulp of the fruit is employed.
" R. gallica, Eu. Petals astringent & tonic.
109. Gillenia trifoliata & stipulacea. Both are called American Ipecac. The root a mild, but efficient emetic, & occasionally cathartic.
110 Spiraea. The species nearly all bitter astringents & tonics.
111. Amygdalus communis, Barbary, Syria &c. Produces Sweet & bitter almonds. The fruit of the latter yields prussic acid.
A. Persica. (Peach) The flowers & kernels contain prussic acid.
112. Cerasus Lauro-cerasus (Common Laurel) Eu. Persia. The oil & distilled water contain a deadly poison
C. Caroliniana: properties similar to the preceding.
C. serotina (Wild Cherry) Bark anodyne tonic & febrifuge.
113. Pyrus Aucuparia, Eu. (Mountain Ash) Flowers bark & root poisonous.
114 Cydonia vulgaris, Eu. (Quince) Seeds demulcent.
115. Sanguisorba Canadensis (Burnet Saxifrage) Subastringent & tonic.

Order Amyridaceae.

116. Myrospermum Peruiferum S.A. Yields Balsam of Peru.
M. Toluiferum, S.A. Yields Balsam of Tolu.
117 Copaifera. Balsam of Copaiva is produced by different (S.A.) species of this genus.

Order Myrtaceae. The Myrtle Tribe.

118. Melaleuca Cajuputi, E.I. Produces Cajuputi Oil. Irritating & stimulating
119 Punica Granatum, as. (Pomegranate) Bark of the root a powerful anthelmintic. Flowers & rind of the fruit tonic & astringent
120. Myrtus communis, Eu. (Common myrtle) Aromatic & astringent
121. Caryophyllus aromaticus, Moluccas Ids. The dried flower-buds, or Cloves, are stimulant & carminative: these yield oil of cloves.
122. Eugenia Pimenta, W.I. The unripe fruit is Allspice. Oily & irritating.
E. acris, W.I. (Wild Clove) Fruit resembles the preceding.
123. Eucalyptus resinifera, N.H. Bark astringent yielding a sort of Kino.

Order Cucurbitaceae. The Gourd Tribe.

124. Lagenaria vulgaris (Bottle gourd) Fruit poisonous.

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125. Cucumis Colocynthis. As., Af. The unripe fruit yields Colocynth
126. Luffa amara E.I. Fruit violently cathartic & emetic.
127. Bryonia dioica, Eu. (Bryony) Root active & purgative
128. Momordica Elaterium, Eu. The fruit affords Elaterium.
129. Melothria pendula, S.A. Extremely drastic.

Order Cactaceae. The Indian Fig Tribe.

130 The fruit of several species is eaten under the name of Indian Figs

Order Grossulaceae. The Gooseberry Tribe.

131. Ribes rubrum produces Red Currants
R. Grossularia is the Gooseberry bush. Native of Europe
R. nigrum, is the Black Currant. " "

Order Hamamelaceae. The Witch Hazle Tribe.

132. Hamamelis Virginica. astringent & sedative.

Order Araliaceae. The Ginseng Tribe.

133. Aralia racemosa (American spikenard) Aromatic, stim. & alterative.
A. nudicaulis (Wild Sarsaparilla) Gently stimulant & alterative.
134 Panax quinquefolium (Ginseng) a very mild aromatic stimulant

Order Cornaceae. The Dogwood Tribe.

135. Cornus (Dogwood) florida (Common Dogwood) Valuable tonic & astring.
C. sericea (Swamp Dogwood) an excellent tonic: useful in intermittent.
C. circinata. astringent & C. stolonifera — tonic & astringent.

Order Umbelliferae. The Umbelliferous Tribe.

136. Cicuta maculata (American Water hemlock) A virulent narcotic poison
C. virosa, Eu. (Water Cowbane) A virulent poison — effect like those of prussic acid.
137. Apium graveolens, Eu. (Celery) Poisonous & acrid when wild & in wet ground, a pleasant salad when cultivated in dry ground.
Petroselinum sativum, Eu. (Parsley) Stimulating salad
138. Carum Carui, Eu. (Caraway) Carminative
139 Anantha crocata, Eu. (Deadtongue) A dangerous poison
OE. Phellandrium, Eu. (Water Dropwort) Less poisonous than the preceding
140. Aethusa Cynapium & Eu. (Fool's parsley) The leaves a narcotic poison
141. Foeniculum vulgare, Eu. (Common Fennel) The fruit yields Oil of Wild Fennel
F. dulce, Eu. (Sweet Fennel). Yields Oil of Sweet Fennel

142. Archangelica atropurpurea (Common Angelica) Pleasant aromatic tonic.
A. officinalis, Eu. Root fragrant, pungent & somewhat bitter.
143. Ligusticum actaeifolium (Nondo. "angelico") Root aromatic & stomachic.
144. Opoponax chironium, Eu. & As. The dried milky juice of the root is Opoponax.
145. Ferula Asafoetida, Persia, E.I. The foetid gum-resin Asafoetida is obtained from the roots.
F. orientalis, As. Supposed to yield the gum-resin Ammoniacum - but Prof. D. Don says it is produced by the Dorema ammoniacum of Persia. See Linn. trans. xvi. 601.
146. Peucedanum officinale, Eu. (Sulphur-wort.) Juice of the root antispas. & diurat.
147. Imperatoria Ostruthicum, Eu. (Master-wort.) Root acrid: a masticatory.
148. Anethum graveolens (Dill) Eu., As., Af. Fruit carminative & stimulant.
149 Heracleum (Cowparsnep) Sphondylium, Eu. & H. lanatum. Like the preceding
150. Galbanum officinale. Syria. Yields the gum-resin Galbanum. See Don, l.c
151. Cuminum Cyminum, Af. (Cumin) Carminative - but rather disagreeable.
152. Daucus Carota & Eu. (Common Carrot) Fruit carminative & diuretic: root used for poultices.
153. Anthriscus cerefolium, Eu. (Chervil) Root eatable
154. Conium (Hemlock, or Poison Hemlock.) Narcotico-acrid; a violent poison. The common species is C. maculatum & Eu.
155. Smyrnium (Alexanders) Olusatrum, Eu. & other species, carminative.
156. Coriandrum sativum, Eu. (Coriander) The fruit aromatic & carminative.

Subclass III. Corolliflorae. Fl. with calyx & corolla. Petals united, bearing the stamens.

Order Caprifoliaceae. The Woodbine Tribe.

157 Triosteum perfoliatum (Fever-root) Bark of the root emetic & cathartic.
158. Sambucus (Elder) Ebulus, Eu. (Common European Elder) Root, cathartic.
S. nigra, Eu Bark purgative & emetic: flowers diaphoretic: berries cold, cooling, laxative, diuretic - known by the name of Elder berries.
S. Canadensis. Resembles S. nigra.

Order Cinchonaceae or Rubiaceae.

159. Cinchona. Many species of this genus (commonly called the Peruvian bark Tree) grow in Peru, Carthagena & other part of S. America - but some of them are, as yet, only known by their commercial names. The following is Lindley's Classification of the principal kinds known in Great Britain.

Pale Barks.	Crown or Loxa Bark.	C. condaminea.
	Silver, Gray, or Huanuco bark.	C. micrantha.
	Rish bark	(not ascertained).
	White Loxa Bark	(not ascertained). [& nitida.
Yellow Barks.	Yellow Bark	C. lancedata, chiefly; also C. hirsuta,
	Calisaya	C. lancedata?
	Carthagena	C. cordifolia?
	Cusco bark.	(not ascertained).
Red Bark.	Red Cinchona Bark of Lima	(not ascertained)
	Cinchona nova	C. magnifolia
Brown Bark.	Huamalies bark	C. purpurea

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160. Exostema Caribaeum. W.I. & Florida (Sea side Beech) Bark febrif. & Emet. This & other species of the genus are bitter & tonic, but contain neither quin. nor Cinch.

161. Pinckneya pubens (Georgia Bark.) Bark febrifugal.

162. Condamineca corymbosa, S.A. used for adulterating Peruvian Bark.

163. Chiococca (Snowberry) densifolia, Brazil. (Cahinca). A powerful emetic & sudorific: very valuable in dropsy.

164. Coffea arabica, Arabia. The albumen of the seeds is Coffee.

165. Psychotria emetica, S.A. The root is the striated or black Ipecacuanha.

166. Cephaëlis Ipecacuanha, S.A. Produces Brazilian Ipecacuanha.

167. Rubia tinctorum (Madder) said to be tonic, diuretic & emmenag. †

Order Valerianaceae. The Valerian Tribe.

168. Valeriana (Valerian) officinalis, Eu. Root-fetid, stim., & narcotic

Order Compositae.

169. Vernonia Noveboracensis. Bitter tonic: employed in intermit. fever

170. Liatris spicata (Button Snake-root) Stim. diaphoretic & diuretic. L. scariosa, squarrosa & other species are also employed as diaphoretics; & some of them are popular remedies against the bite of a rattlesnake L. odoratissima exhales a powerful odor of Vanilla

170. Eupatorium perfoliatum (Boneset) A valuable tonic stimulant

172. Mikania Guaco, S.A. Remedy for the bite of poisonous snakes. †

173. Tussilago Farfara §? Eu. (Coltsfoot) Slightly tonic bitter.

174. Erigeron Philadelphicum (Fleabane) Tonic.

E. Canadense (Horseweed) A bitter tonic.

175. Solidago (Golden rod) odora. Yields a fragrant stimulant & diaphoretic oil, which resembles both anise & Sassafras. The leaves used as a substitute for tea.

176. Inula Helenium §. Eu. (Elecampane) Tonic, diuretic, diaphoret.

177. Anthemis nobilis, Eu. Produces Chamomile flowers. Tonic, stim. emet.

178. Maruta Cotula § Eu. (Mayweed) Fetid & acrid: emet. & diaphoret.

179. Anacyclus Pyrethrum, Af., As. (Pellitory of Spain) Root hot & acrid.

180. Ptarmica vulgaris, Eu. (Sneezewort). Plant pungent; sternutatory

181. Pyrethrum Parthenium, Eu. (Feverfew) Bitter, tonic, antispasm.

182 Artemisia (~~Mugwort~~) (Wormwood) Most of the species of this numerous genus are bitter & more or less aromatic plants.

A. Absinthium, Eu. (Common Wormwood). a powerful bitter & stomachic.

A. Abrotanum, Eu. (Southernwood) Anthelmintic

A. Moxa, China. The woolly leaves furnish Moxa.

A. Dracunculus, Rusia (Tarragon) Leaves pungent & stimulating: used as a pickle, & to flavor vinegar.

182. Tanacetum (Tansy) vulgare §. Eu (Common Tansy) Bitter & Cordial

183. Calendula officinalis, Eu. (Pot marygold) Anthelmintic: also used to adulterate saffron.

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184. Lappa (Burdock) minor. § Eu Root tonic, aperient, sudorific & diuret.
185. Gnaphalium (Cudweed) polycephalum (Life everlasting; Balsam.) Astringent, balsamic & expectorant.
186. Helenium autumnale (American Sneezewort) Bitter & errhine.
187. Lactuca virosa, Eu (Wild Lettuce) narcotic
L. sativa (Eu. Common Lettuce) Produces Lactucarium.
L. elongata (American Wild Lettuce) Anodyne, diaph. & diuretic
188 Taraxacum Dens leonis, Eu. (Dandelion) Tonic, diuretic & aperient
189 Cichorium Intybus § Eu. (Wild Succory) Root tonic & aperient. Also used as a substitute for coffee

Order Lobeliaceae. The Lobelia Tribe.

190. Lobelia inflata (Indian tobacco. "Low belia") The sheet anchor of the steam doctors: emetic, sudorific & expectorant.
" L. siphilitica ("High belia") Emetic, cathartic & diuretic.
191 Hippobroma longifolia, W.I. Virulent; produces fatal hypercatharsis

Order Vaccinaceae. The Whortleberry Tribe.

192. Vaccinium (Whortleberry) The fruit of nearly all the species is sweet & wholesome: & somewhat diuretic: the bark is astringent
193. Oxycoccus vulgaris, Eu., & macrocarpus produce Cranberries.

Order Ericaceae. The Heath Tribe.

194. Rhododendron maximum (Big Laurel. Rose Bay) Astring. & stimult.
" R. chrysanthum, Siberia. a powerful narcotic, producing intoxication
195. Kalmia latifolia (Laurel. Calico-bush) powerful narcotic
K. angustifolia (Dwarf or Sheep-laurel) Like the preceding.
196. Azalea pontica, Western Asia. The flowers poison honey
197. Ledum latifolium, Eu. Leaves narcotic -
198. Gautiera (incorrectly Gaultheria) procumbens (Spicy Winter green) Stimulating, aromatic, diuretic & emmenagogue
199 Arctostaphylos (or Arbutus) Uva Ursi, Eu. (Bearberry) Astring. & diuret.

Sub Order Pyrolaceae. The Winter-green Tribe.

200. Chimaphila umbellata (Pipsisiwa) Aromatic & diuretic
C. maculata (Spotted Winter green. Diuretic & subastringent.

Order Ebenaceae. The Ebony Tribe.

201. Diospyros Virginiana (Persimmon) Bark astringent & febrifugal: immature fruit excessively astringent.

Order Styraceae. The Storax Tribe.

202. Styrax officinale, Western Asia. Yields the balsamic resin Storax.
S. Benzoin, Eastern Asia. Yields the balsamic resin Benzoin.

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Order Aquifoliaceae. The Holly Tribe.

203. Ilex (Holly) Aquifolium (European Holly) Eu. Bark tonic.
I. opaca (American Holly) virtues probably similar to the preceding
I. vomitoria. A mild emetic.

204. Prinos verticillatus (Winter Berry.- Black Alder) Bark tonic; berries emet.

Order Sapotaceae

205. Bassia longifolia, E.I. Oil of the fruit-used to cure itch as well as to burn in lamps: infusion of the leaves, bark of green fruit used for rheumatism

206. Achras Sapota, W.I. (Sapodilla Plum) Bark a powerful astringent; seeds diuretic.

Order Oleaceae. The Olive Tribe.

207. Olea Europaea Eu. (Olive) The fruit yields a mild demulcent oil called Olive oil. The bark is bitter & astringent.

208. Ornus Europaea (Flowering ash) The branches yield Manna.
O. rotundifolia, Levant. Yields the best Manna.

Order Apocynaceae. The Dogbane Tribe.

209. Cerbera Manghas, E.I. Kernels emetic & poisonous; milky juice purgative.
C. Thevetia S.A. Bark bitter, cathartic & a powerful febrifuge

210. Strychnos Nux Vomica, E.I. The seeds of this & other species are highly poisonous & known by the name of Nux vomica. Bark bitter & tonic - usually called False Angustura.-
S. Colubrina, E.I. The wood is called Lignum colubrinum, celebrated in India for curing the bite of venemous serpents.
S. potatorum, E.I. ℞ (Clearing nut) The ripe seeds used to make turbid water clear.
S. Ignatius, Philippine Isl. Poisonous; but used as a remedy for cholera
S. toxifera, Guayana. Yields the celebrated poison Urari or Woorari.
S. pseudoquina, Brazil. Bitter & substringent: valuable febrifuge

211. Willughbeia edulis E.I. The milky juice yields a poor caoutchouc

212. Allamanda cathartica. Cayenne &c. Leaves a good cathartic

213. Nerium (Oleander) The root of N. odoratum & Oleander (Eu) poisonous

214. Apocynum (Dogsbane) androsaemifolium. Root bitter, emet. & diaph.
A. cannabinum (Indian hemp.) Similar to the preceding.

215. Urceola elastica, Sumatra. Yields fine Caoutchouc

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216. Wrightia antidysenterica, E.I (Conessi) Bark astring. & febrifuge
217. Plumiera rubra, W.I. Milk excessively corrosive.
Other species of Plumiera are active cathartics

Order Asclepiadaceæ. The Milk-weed tribe.

218. Asclepias tuberosa (Butterfly-weed. - Pleurisy-root) Root diaphoretic & expectorant: also a mild tonic & stimulant †
A. syriaca & incarnata: said to be anodyne & expectorant †.
219. Calotropis gigantea, E.I. (Madar, Akum, &c.) Root, bark, & inspissated juice, powerful alteratives & purgatives. Valued in the East
220. Tylophora asthmatica, E.I. Root used instead of Ipecac. in India
221. Cynanchum (Dog's bane) Argel, Egypt. Leaves purgative, & often largely mixed with Alexandrian Senna - to which its frequent griping & other unpleasant effects are attributed.
222. Hemidesmus Indicus E.I. Sarsaparilla of India is chiefly the root of this species

Order Gentianaceæ. The Gentian Tribe

223. Gentiana Catesbæi. Root intensely bitter: like G. lutea
G. lutea, Eu. (Common Gentian). Valuable bitter tonic.
Most of the species of Gentian are bitter, & several of them are substituted for G. lutea.
224. Agathotes Chiratita, E.I. Gentian of India, a val. tonic bitter.
225. Frazera Carolinensis (American Columbo) Root a pure bitter.
226. Erythræa Centaurium §? Eu. (Centaury) Bitter like Gentian.
227. Sabbatia angularis (American Centaury) Tonic & stomachic.
228. Menyanthes trifoliata, Eu. (Buck-bean) a valuable bitter tonic.
? 229 Spigelia Marilandica (Carolina Pink-root) Purgative, narcotic & anthelmintic.

Order Convolvulaceæ. The Bindweed Tribe.

230. Convolvulus (Bindweed) Scammonia, Levant & Greece. The cathartic resin called Scammony is obtained from the root.
C. panduratus (Man-of-the-earth) Root cathartic.
231. Ipomæa macrorhiza. Root saccharine & farinaceous - not purgative, as was once supposed.
I. Purga, Mexico. The root is the true Jalap.
I. Orizabensis, Mexico. The root is a kind of Jalap.
I. Cathartica, St. Domingo. Root purg., but apt to prove hypercathartic.
232. Calystegia Sepium, Eu. Root purgative; milder than Scammony.

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Order Solanaceae. The Potatoe Tribe.

233. Hyoscyamus (Henbane) niger Eu. (Common Henbane) Narcotic, antispasm.

234. Atropa Belladonna. Eu. (Deadly Nightshade) Powerful narcotic.

235 Capsicum annuum, S.A., E.I. (Cayenne pepper) Hot stimulant

C. frutescens ☿ (Goat-pepper) & C. baccatum (Bird-pepper) have similar properties, but are more acrimonious

236. Datura Stramonium. Eu. ☉ (Thornapple. Stinkweed) Violent narcotic poison. Useful anodyne & sedative

var. Tatula ☉? Eu. Properties same as the preceding.

237. Physalis (Winter cherry) somnifera. E.I. & Eu Reputed to be narcotic, diuretic & alexipharmic.

All the species of Physalis seem to be diuretic

238. Solanum nigrum ☉ Eu. (Common nightshade) narcotic

S. Dulcamara ☿. Eu. A poisonous narcotic – particularly the berries. It is usually called Bittersweet.

S. esculentum, E.I. (Aubergine) Fruit edible

S. Lycopersicum (S.A.) (Tomato) Fruit gently laxative – & said also, to produce ptyalism.?

239. Nicotiana (Tobacco) Tabacum. Central America. (Common Tobacco) A powerful stimulant narcotic, & errhine. Valuable occasionally as a medicine, but deliterious, & disgusting when employed in any other way.

N. rustica, Eu. Milder than the preceding. Syrian & Turkish Tobacco are prepared from this species

240. Crescentia Cujute, W.I. (Calabash Tree) Fruit pectoral.

Order Scrophulariaceae. The Figwort Tribe.

241. Digitalis (Fox-glove) purpurea Eu. (Common Foxglove) Diuretic & narcotic.

242. Scrophularia (Figwort) nodosa, Eu. Leaves purg. & emet. †

S. aquatica, Eu. (Water Betony) Resembles the preceding †

243. Linaria vulgaris ☿, Eu. (Toad flax) Cathartic & diuretic †

244. Gratiola officinalis. Eu. (Hedge hyssop.) Bitter purg. & emetic.

245. Verbascum (Mullein) Thapsus ☉ Eu. (Common Mullein) demulc. †

Order Labiatae. The Mint Tribe.

A great number of these abound in volatile & aromatic oils, many of which have been employed in medicine as aromatics & stimulants. Only the more important are here noticed.

246. Lavandula (Lavander) vera, Eu (Common Lavander) Yields a fragrant oil, which is an ingredient of Spirit of Lavander, Eau de Cologne & Vinaigre aux quatre voleurs.

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Lavandula Stoechas, Eu. as. used by the Arabs as an expectorant & antispasmodic.

L. Spica, Eu. (French Lavander) Yields oil of Spike, - not medicinal

247. Mentha (Mint) viridis §. Eu. (Spear-mint) Aromat. & carmin.

M. piperita §. Eu. (Pepper-mint) Pleasant aromat. & stimulant.

M. Pulegium Eu. (Penny royal) Stim. & reputed emmenagogue

248. Lycopus (Water horehound) Europaeus, Eu. Astringent, & once a popular remedy (like the next) for hemorrhage †

L. virginicus (Bugle weed) Mild narcotic & astringent

249. Salvia (Sage) officinalis. Eu. (Garden Sage) Aromatic & bitter

250. Rosmarinus officinalis (Rosemary) Eu. Used to promote the growth of hair: & for preparing Hungary water, Eau de Cologne &c -

251. Amaracus Dictamnus, Candia. (Dittany of Crete) Aromat. & tonic

252. Origanum vulgare §? Eu. (Wild marjoram) Yields Oil of Thyme

251. Thymus vulgaris, Eu. (Thyme) & Serpyllum, Eu (Garden Thyme) are fragrant & stimulating

252. Hyssopus officinalis, Eu. (Hyssop) Stimulating stomachic.

253. Cunila mariana (Dittany) Stimulating diaphoretic

254. Hedeoma pulegioides (American Penny royal) Aromat. & emmenag.

255. Melissa officinalis §, Eu. (Common Balm) Aromat. & bitter

256. Scutellaria lateriflora (Scullcap.) Used to cure hydrophobia †

257. Nepeta Cataria §. Eu. (Catnep.) Mild stim. & diaphoretic

N. Glechoma §. Eu. (Ground Ivy) Tonic, diaphoretic &c.

258. Leonurus Cardiaca §. Eu. (Mother-wort) Said to be emmenagogue

259. Stachys Betonica, Eu (Betony) Used as an ingredient of Cephalic snuff - its fine rigid hairs causing sneezing.

260. Marrubium vulgare §. Eu. (Horehound) Mild tonic & stimulant. - an ingredient of "cough candy"

261. Pycnanthemum. Many species of this genus are indigenous to the United States. They are all aromatic stimulants

262. Collinsonia (Horsebalm) Canadensis. Root tonic, astring. & diuret.

263. Monarda punctata (Horsemint) Yields a stimulating oil.

M. didyma (Oswego Tea) Aromatic Stimulant & diaphoretic

(Many other N. Amer. species possess similar properties to the last.)

Order Plumbaginaceae. The Leadwort Tribe

264. Statice Limonium, Eu. (Marsh Rosemary) Root a powerful astringent

265. Armeria vulgaris, Eu. (Thrift.) Diuretic

Order Primulaceae. The Primrose Tribe.

266. Anagallis (Pimpernel) arvensis §. Eu (Scarlet Pimpernel) Astringent & acrid - once used as a remedy for cancer †.

267. Cyclamen (Sowbread) hederaefolium, Eu. Root very acrid.

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Order Plantagineae. The Plantain Tribe.

268. Plantago (Plantain) major § Eu (Common plantain). Seeds mucilaginous & demulcent: leaves sometimes used for dressing blisters.

Subclass IV. Monochlamydeae

Flowers furnished with a calyx only; or without floral envelopes.

Order Phytolaccaceae. The Pokeweed Tribe.

269. Phytolacca decandra (Pokeweed) Violently emetic & cathartic Used for the radical cure of hemorrhoids. (See King, in Dunglison's Journal)

Order Chenopodiaceae. The Goosefoot Tribe.

270. Chenopodium anthelminticum. Yields oil of wormseed, a powerful anthelmintic

C. Botrys § Eu. (Jerusalem Oak) Tonic, expectorant & anthelmint.

C. ambrosioides (Mexican tea) Tonic, antispasm. & anthelmint.

C. olidum, Eu. (Stinking Goosefoot) Antispasmodic & emmenag.

271. Salsola. The ashes of several species; such as S. Kali, Soda, &c, & Tragus, yield Soda - or rather Carbonate of Soda.

Order Nyctaginaceae. The Marvel of Peru Tribe

272. Mirabilis Jalapa (Four o'clock) The roots of this & other species are purgative.

Order Lauraceae. The Cinnamon Tribe.

273. Cinnamomum (Cinnamon) Zeylanicum, Ceylon (True Cinnamon) A pleasant aromatic stimulant

Variety Cassia, E.I. A degenerate state of the preceding, according to Nees v. Esenbeck. It produces cassia lignea.

274. Camphora officinarum, Japan &c Produces ordinary Camphor

275. Persea gratissima, S.A. (Avocado Pear) Leaves balsamic

276. Sassafras officinale (Common Sassafras) Aromatic & tim. & diaph.

277. Benzoin odoriferum (Spice bush) Stimulant & aromatic.

278. Laurus nobilis, Asia minor & S. Eu. (Sweet Bay) Leav. & fr. aromatic.

Order Polygonaceae. The Knot-grass Tribe.

279. Rumex (Dock) crispus § Eu. The astringent root used for itch.

R. obtusifolius § Eu. Root like the preceding.

R. Acetosa Eu (Common Sorrel); R. Acetosella § Eu. (Sheep Sorrel) & R. scutatus, are acid, & employed as refrigerants & diuretics

R. alpinus, Eu. (Monk's Rhubarb) Root purgative.

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280. Rheum (Rhubarb) This is a genus of many species, most of which are natives of Siberia, Tartary, & the northern mountains of India. Several of them produce the officinal rhubarb, but which, it is difficult to determine with certainty. The principal region that affords it is in the heart of Thibet

R. Emodi, E.I. Produces a valuable kind of rhubarb, but it is more tonic & astringent than the ordinary kind.

R. rhaponticum, Euxine & Caspian Seas, Siberia, &c Root aromatic, bitter & astringent.

R. undulatum, China & Sib. Produces a spurious kind of rhubarb.

R. compactum, Tartary, China. Root not valuable –

R. palmatum, China, Thibet. This is generally regarded as the source of true officinal Rhubarb, but Lindley thinks the matter is doubtful.

R. crassinervium. A species lately introduced into England, – probably from Siberia, & strongly resembling genuine rhubarb.

281. Rumex (Dock) crispus &. Eu. (Common curled Dock) Root astringent – used to cure Itch

282. Polygonum Hydropiper. Eu. (Water pepper) Leaves very acrid

P. Bistorta, Eu. (Bistort) A powerful astringent.

P. Fagopyrum, Eu. (Buckwheat), a valuable article of diet.

P. amphibium, Eu. Roots used as a substitute for Sarsaparilla.

Order Myristicaceae. The Nutmeg Tribe.

283. Myristica moschata, E.I. The fruit yields both nutmegs & mace

Order Thymelaceae. The Mezereum Tribe.

284. Daphne Mezereum, Eu. The bark is used as a vesicatory & mastica-

D. Laureola, Eu. (Spurge Laurel) whole plant very acrid

285. Lagetta lintearia, W.I. (Lace bark) Bark like Mezereum.

286. Dirca palustris (Leather wood) Bark acrid & emet.; fr. narcot.

Order Santalaceae. The Sander's-wood Tribe

287. Santalum paniculatum, Sandwich Ids.

S. myrtifolium, India. This & the preceding yield the Sandal wood of Commerce

Order Aristolochiaceae. The Birthwort Tribe.

288. Aristolochia (Birthwort) A numerous genus, most of the species have roots of a strong, bitter, aromatic taste. Several are used in their native countries as emmenagogues, anthelmintics & as antidotes for the bite of poisonous animals

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A. Serpentaria (Virginian Snakeroot) Stimulant, tonic & antispasm

289. Asarum Europaeum, Eu. Roots purg. emet. & diuretic

A. Canadense. (Colts foot. Wild ginger) Aromat. tonic, stim. & diaphor.

Order Euphorbiaceae. The Spurge Tribe.

290. Croton Cascarilla, W.I. Said by some to produce Cascarilla Bark, but others doubt & think the bark is produced by the next species

C. Eleuteria, W.I. Lindley, Don & others think this produces the true Cascarilla

C. Pseudo-china, Mexico. Bark a valuable medicine like Cascarilla

C. Tiglium. E.I. Produces the drastic purgative Croton Oil.

Many other species of Croton are medicinal; but not yet officinal

291. Ricinus communis, E.I. The seeds yield the well known Castor oil

292. Jatropha Curcas, E.I. (Physic nut) Seeds violently emetic.

293. Janipha Manihot, Brazil. The prepared fecula of the root is called Cassava & Tapioca.

294. Hevea Guianensis, Guayana. Produces Caoutchouc.

295. Hippomane Mancinella, W.I. (Manchineel) Juice an acrid poison

296. Hura crepitans, W.I. (Sandbox) Milky juice venomous: seeds drastic

297. Euphorbia. The drug Euphorbium is produced by several African species of this genus.

E. Ipecacuanha. Root a cathartic & emetic: in small doses diaph. & expectorant.

E. corollata. Cathartic & emetic. Resembles Ipecacuanha

E. hypericifolia (Milk purslane) Astringent, alterative & emmen.

Order Piperaceae. The Pepper Tribe.

298. Piper nigrum, E & W.I. (Black pepper) Dried berries hot & stimult.

P. longum, E.I. (Long pepper) Fruit very pungent.

P. Betle. E.I. Leaves stimulating narcotic: produce intoxication

P. Cubeba, Java. The ripe fruit is called Cubebs.

P. Caninum, Java. Also produces Cubebs.

Order Amentaceae.

Suborder 1 Salicineae. The Willow Tribe.

299. Salix (Willow) The bark of most (all?) of the species of this numerous genus contains a principle called Salacine, which is sometimes used as a substitute for Quinia. The most important medicinal kinds are, S. Russelliana, alba, & pentandra. The N. American species have scarcely been examined as to their medicinal properties

S. nigra, however, is used as a tonic & febrifuge.

300. Populus (Poplar) nigra, Eu. (Black poplar) The young buds are aromatic & are sometimes made into an ointment for wounds &c.

Medical Botany.

Order Urticaceae. The Nettle Tribe.

301. Urtica (Nettle) Most of the species of this genus are armed with stinging hairs which produce intense pain when they touch a person's skin. Some of them are so venomous as to cause dangerous inflammation, or even death. None are used in medicine

302. Humulus Lupulus (Hops) Eu. The ripe fertile aments are Hops. They are bitter & are said also to be narcotic - but this is doubtful

303. Ficus (Fig.) The juice of some species is poisonous - & that of others yields Caoutchouc.

F. Carica (Common Fig) As. Fruit slightly aperient: used for confections

304 Cannabis sativa, E.I. (Hemp.) Powerful stimulating narcotic In the East the dried leaves are often mixed with Tobacco for smoking.

305. Morus (Mulberry) nigra, Persia (Black Mulberry) Fruit cooling & laxat.

306. Dorstenia (Contrayerva) The officinal article is produced by several S. American species & W. Indian species, particularly by D. Contrayerva, & D. Brasiliensis.

307. Antiaris toxicaria, Java, &c (Upas) A most virulent poison

Order Amentaceae, Suborder Betuleae. The Birch Tribe

[This, & the other suborders of Amentaceae should have followed Salicineae on the preceding page]

308 Betula (Birch) lenta (Cherry Birch) The bark is aromatic

309 Alnus (Alder) glutinosa Eu. Bark astring. & febrifuge

Suborder Cupuliferae. The Nut Tribe.

310. Quercus (Oak) The bark of most of the species is highly astringent. Q. tinctoria (Black Oak) yields Quercitron bark.

Q. infectoria, As. Minor, produces galls or nuts.

Suborder Myriceae. The Gale Tribe.

311. Myrica Gale, Eu. (Sweet Gale). Infusion used for itch & as a vermif.

M. cerifera (Bayberry) Bark of the root acrid & astring.; also emet.

312 Comptonia asplenifolia (Sweet Fern) Tonic & astringent.

Suborder Styraciflueae.

313. Liquidambar styraciflua (Sweet gum). In the Southern States it yields a fragrant turpentine which contains no Benzoic acid The liquid Storax of the Shops is produced by L. Altingia & L. orientale.

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Order Juglandaceae. The Walnut Tribe.

314. Juglans cinerea (Butternut) Extract of the bark a mild cathartic.

Order Ulmaceae. The Elm Tribe

315 Ulmus (Elm) The inner bark of several species is demulcent & mucilaginous. U. fulva affords the Slippery Elm of the shops.

Order Cycadaceae

316. Cycas revoluta Japan & C. circinalis, E. I. produce a kind of Sago

317 Zamia. The trunk of several W. Indian species yields a sort of arrowroot & a beautiful white fecula is obtained of Z. integrifolia a native of Florida: this last is the Coontee of the Seminole Indians

Order Coniferae. The Fir Tribe

318. Pinus (Pine) sylvestris, Eu. (Scotch Fir) Yields Turpentine

P. Pumilio, Eu. Produces Hungarian balsam

P. Pinaster, Eu. Produces Bordeaux turpentine.

P. Palustris (Yellow Pitch Pine) Produces most of the American turpentine, from which Spirit of Turpentine is distilled

319 Abies (Spruce & Larch) picea, Eu. (Silver Fir) Produces Strasburgh Turpent.

A. balsamea (Balm of Gilead) Yields Canada Balsam.

A. Canadensis (Hemlock Spruce) Stimulant, diuret, & rubefac.

A. Larix, Eu. (Common Larch) Produces Venice turpentine

320. Juniperus communis, Eu. (Common Juniper) Berries stim. diuret.

J. Virginiana (Red Cedar) Strongly resembles Savin.

J. Sabina, Eu. as (Savin) Externally rubefac. & vesic.: intern. emmen.

Suborder Taxaceae. The Yew Tribe.

321. Taxus baccata, Eu. (European Yew) Leaves & seeds narcotic.

T. Canadensis seems to have similar properties to the European spec.

Class II. Endogenae

Subclass I. Rhizanthae

Fungoid parasitical plants

Order Balanophoraceae

322. Cynomorium coccineum Eu. Formerly used as an astringent, under the name of Fungus Melitensis

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Subclass II. Floridae

Leafy plants with the floral envelopes verticillate

Order Scitamineae. The Ginger Tribe.

323. Zingiber officinale As. The rhizoma is ginger.

324 Curcuma Zerumbet, E.I. & C. Zedoaria, As. produce Zedoary, a substance resembling ginger, but milder

C. longa, E.I. produces Turmeric

325. Amomum Cardamomum E.I. Said to produce the round Cardamoms.

A. Grana Paradisi, As. (Grains of Paradise) Seeds aromat. & cordial.

326. Elettaria Cardamum E.I. (True Cardamom) Seeds aromat. & pungt.

327. Alpinia Galanga, Sumatra. The roots are Galanga major of the shops:- a pungent acrid aromatic.

Order Orchidaceae. The Orchis Tribe

328. Orchis Several species of this genus produce Salep.

329 Vanilla claviculata, W.I. produces the fragrant Vanilla of Commerce

Order Marantaceae. The Arrow-root Tribe.

330 Maranta arundinacea. W.I. The tubers yield Arrow-root.

Order Musaceae. The Banana, Tribe.

331 Musa sapientum W.I. (Banana) & M. paradisiaca E.I. (Plantain) produce large fleshy nutricious fruits.

Order Amaryllidaceae. The Amaryllis Tribe.

332 Several genera of this order produce poisonous bulbs. In the common Narcissus & Daffodil the poisonous matter is so diluted as merely to prove emetic or cathartic

Order Dioscoraceae. The Yam Tribe.

333 The roots of several species of Dioscoreas are used instead of Potatoes, & are known by the name of Yams. D. villosa is emet. expect. & diaphoret.

334 Tamus communis Lu. Root acrid.

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Order Iridaceae. The Flag Tribe.

334. Crocus sativus, Eu. Saffron is the large stigma of this plant.

335. Iris (Flag) florentina, Eu. The rhizoma is Orris root. Aromatic.

I. pseudacorus Eu. Rhizoma acrid, purgative & emetic.

Order Bromeliaceae. The Pine-apple Tribe

336. Ananassa sativa W.I. (Pine apple) Subacid & cooling.

Order Smilaceae. The Smilax Tribe.

337. Smilax. Several tropical species of this genus are mixed in the officinal Sarsaparilla, but only one species seems to yield the genuine drug. Most of the officinal article is spurious & inert. S. Sarsaparilla does not appear to be medicinal. The rhizoma of S. hastata & probably of other species, yields a reddish fecula which the Florida Indians prepare in large quantities for food.

S. China produces the China root of the shops

S. Pseudo China. The rhizomas are used in the diet drinks of irregulars practitioners in the Southern States

Order Liliaceae. The Lily Tribe.

338. Erythronium americanum (Dog's tooth Violet) Root & stem emetic

339. Aletris farinosa. An intense bitter. Tonic: used in chronic rheumatism.

340. Scilla maritima. Eu (Squill). Bulbs emet., diuret. & expect.

341. Allium Cepa, Egypt. (Onion) Stimulant, diuret., fetid.

A. sativum. Eu. Local irritant: internally stim., expect. diuretic. Stinks more than the preceding.

342. Aloe socotrina. Socotra. Yields the bitter purgative Socotrine Aloes.

A. vulgaris, E.I. & Af. Produces Barbadoes or Hepatic Aloes

A. spicata, C.G.H. Yields Cape Aloes & Horse Aloes.

Order Melanthaceae. The Colchicum Tribe

343. Veratrum viride (Green Hellebore) Root acrid, emetic & powerfully stimulant, - followed by sedative effects.

V. album, Eu. (White Hellebore) Resembles the preceding

V. angustifolium. active like the preceding

V. Sabadilla W.I. Produces Sabadilla seeds, a source of the vegetable alkali Veratria, a violent local stimulant. Used in gout, rheumt. &c.

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344. Helonias erythrosperma. A narcotic poison. Used to kill flies.
H. dioica (Blazing Star) Root tonic & anthelmintic
345. Schoenocaulon officinale, Mexico. Produces a part of the Sabadilla seeds of commerce
345. Colchicum autumnale, Eu (Meadow Saffron) Acrid narcot. & emet.

Order Trilliaceae.

346. Trillium erectum, grandiflorum &c. Roots said to be violently emetic. but the "unlicenced faculty" say they are astringent, tonic & alterative.
347. Medeola Virginica (Indian Cucumber) Diuretic; hydrogogue

Order Palmaceae. The Palm Tribe

348. Sagus laevis, Sumatra & Molucca. (Sago Palm) The cellular part of the trunk, & that of ~~Sagus~~ produces Sago the next
349 Caryota urens, E.I., are the principal sources of Sago
350 Cocos nucifera. W.I. produces Cocoa nuts.
351. Phoenix dactylifera Eu. As. produces Dates

Order Araceae. The Arum Tribe.

352. Arum maculatum, Eu. (Wake Robin) Tubers farinaceous, mixed with a volatile acrid poison. The latter is removed by heat & washing leaving a kind of fecula called Portland Sago.
A. triphyllum (Indian Turnip). Rhizoma violently acrid; dried, farinaceous & harmless.
353. Symplocarpus foetidus (Skunk Cabbage) Root & seeds antispasm.
354. Dieffenbachia Seguina W.I. (Dumb cane) A very venomous plant.

Order Acoraceae. The Sweet Flag Tribe.

355. Acorus Calamus, Eu. The rhizoma is called Calamus or Sweet Flag

Subclass III. Glumaceae.

Leafy plants with the floral envelopes imbricated

Order Graminaceae. The Grass Tribe

356. Lolium temulentum, Eu. (Darnel) Seeds a narcotic poison
357. Triticum vulgare. As (Wheat) The principal source of starch
358 Hordeum vulgare. As (Barley) Pearl Barley is officinal

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359. Secale cereale. As. (Rye). Produces Ergot.
360. Bromus (Brome grass.) mollis. Eu. Narcotic.
B. purgans of Cathartic. S.A. grains said to be emet. & purg. †
361. Avena sativa (Oats) Oat-meal is a light nourishing kind of food.
362. Andropogon (Beard grass) Some species aromatic.
363. Saccharum (Sugar cane) Sinense, China. Produces China Sugar
S. officinarum, E.I. Produces common Sugar.

Order Cyperaceæ. The Sedge Tribe.

364. Cyperus (Galingale). A few species produce tubers, which Contain fecula, a mild astringent, & a feeble aromatic principle
364/a Carex (Sedge) The creeping stems of several species are said to be diaphoretic, demulcent & alterative; & are known in Europe by the name of German Sarsaparilla.

Flowerless Plants

Class III Athecogamous or Semivascular Plants

Order Lycopodiaceæ. The club moss Tribe.

365. Lycopodium (Club moss.) clavatum Eu. The spores of the thecæ, are called Lycopodium. Used to cure Lichen polonicus, & to prevent excoriation in children
L. Selago. Eu. Externally, an emetic: externally used as a counter irritant, in the form of ointment. - also to keep blisters open.

Order Filices. The Fern Tribe

The rhizomata of some are astringent, & occasionally aromatic.
366. Polypodium Calaguala. S.A. Sudorific, antisyphilitic & febrif.
367. Adiantum (Maidenhair) Capillis Veneris. Eu. Pectoral: used to make the syrup Capillaire. †
A. pedatum. Said to be pectoral & lenitive
368. Pteris Aquilina, Eu. (Common Brake) Anthelmintic †
369. Nephrodium (Shield Fern) Filix mas. Eu. Anthelmintic. The Oil of Fern is extracted from the rhizoma by Ether.
370. Aspidium acrostichoides. Said to be anthelmintic
371. Osmunda regalis. Eu. (Osmund Royal) Rhizoma tonic & styptic

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Class IV. Amphigamous or Cellular Plants.

Order Fungaceae. The Fungus Tribe

372. Ergoteccia abortifaciens. The fungus that produces the diseased condition of the grain of Rye, known by the name of Ergot. See a paper by Mr. Quekett, in the Linnaean Transactions, vol. XVIII.

373. Pachyma Cocos. A subterranean fungus of Georgia & the Carolinas called Tuckahoe. (Sclerotium gigantaeum, Torrey in Med. Repos. 1819) Used medicinally in the South – but the properties are not well ascertained. Consists almost entirely of Pectic Acid

P. tuber regium. Moluccas. Resembles the preceding. Used for diarrhoea.

374. Tuber Cibarium, Eu. A subterranean fungus called Truffle.

375. Agaricus. An immense genus, including several edible species, the principal one of which is A. campestris or Common Mushroom. Many species are highly poisonous; & several produce a kind of intoxication.

Order Lichenaceae. The Lichen Tribe

376. Cetraria Islandica Eu. as. (Iceland moss) Bitter & gelatinous. The species of Variolaria, Parmelia parietina, & many others are very bitter. Others – such as Cladonia rangiferina, Eu (Reindeer moss) & Cetraria nivalis Eu. are nutricious, with but little bitterness.

377. Gyrophora. Several large species of this genus constitute the Tripe de Roche of the Canadians – a little bitter & griping, but nutricious, substance.

Order Algaceae. The Seaweed Tribe.

378. Fucus vesiculosus, Eu. &c (Seawrack) Used in Scrofula. This & other Fuci are probably efficacious from the Iodine which they contain.

379. Chondrus crispus, Eu (Carragean or Irish moss) Yields a mild nutritive jelly.

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